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South Island Dairying Development Centre

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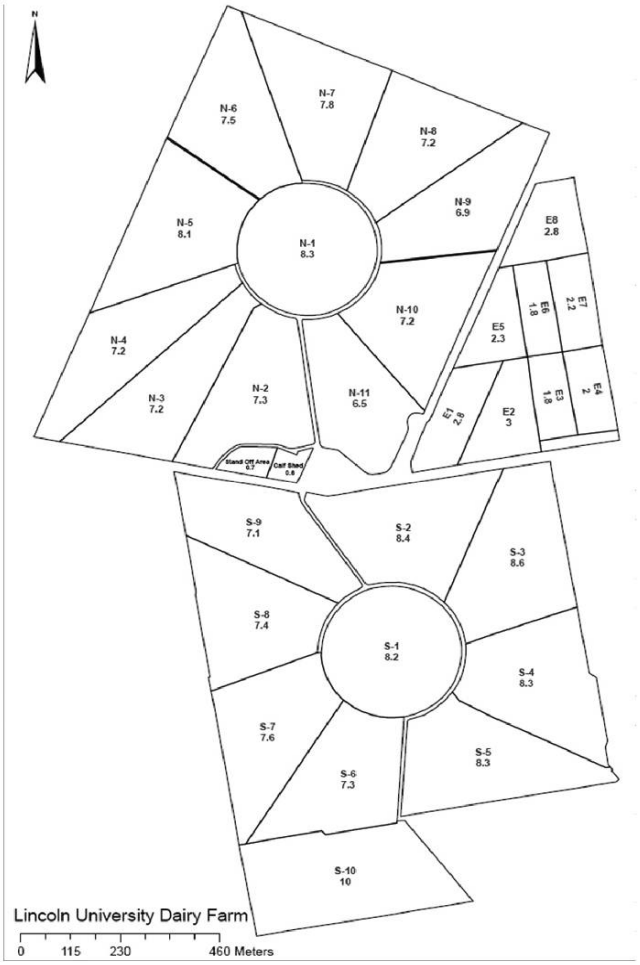
Phone: +64 3 325 3629
Fax: +64 3 325 3603
Email: office@siddc.org.nz
www.siddc.org.nz

Lincoln University Dairy Farm

20 February 2014



Staff

Peter Hancox – Farm Manager
Adam Vollebregt – 2IC
Alistair Linfoot – Farm Assistant
Pending Appointment – Farm Assistant

LUDF Hazards Notification

1. Children are the responsibility of their parent or guardian
2. Normal hazards associated with a dairy farm
3. Other vehicle traffic on farm roads and races
4. Crossing public roads
5. Underpass may be slippery

Please follow instructions given by event organisers or farm staff

Introduction

The 186 hectare irrigated property, of which 160 hectares is the milking platform, was a former University sheep farm until conversion in 2001. The spray irrigation system includes two centre pivots, small hand shifted lateral sprinklers, and k-lines. The different soil types on the farm represent most of the common soil types in Canterbury.

LUDF Strategic objective 2011-2015:

To maximise sustainable profit embracing the whole farm system through:

- *increasing productivity;*
- *without increasing the farm's total environmental footprint;*
- *while operating within definable and acceptable animal welfare targets; and*
- *remaining relevant to Canterbury (and South Island) dairy farmers by demonstrating practices achievable by leading and progressive farmers.*
- *LUDF is to accept a higher level of risk (than may be acceptable to many farmers) in the initial or transition phase of this project.*

Additional objectives

- To develop and demonstrate world-best practice pasture based dairy farming systems and to transfer them to dairy farms throughout the South Island.
- To consider the farms full environmental footprint, land requirement, resource use and efficiency in system decision making and reporting
- To use the best environmental monitoring and irrigation management systems in the development and implementation of practices, that achieve sustainable growth in profit from productivity and protection of the wider environment.
- To ensure optimal use of all nutrients on farm, including effluent, fertiliser, nutrients imported from supplements and atmospheric nitrogen; through storage where necessary, distribution according to plant needs and retention in the root zone.
- To continue the environmental monitoring programme and demonstrate technologies and farming practices that will ensure the average annual concentration of nitrate-N in drainage water from below the plant root zone remains below the critical value [16 mg N/L] specified in ECan's proposed regional rule in order for LUDF to remain a 'permitted activity' [Rule WQL20].
- To store and apply effluent such that there is no significant microbial contamination of the shallow aquifers.
- To manage pastures and grazing so per hectare energy production is optimised and milkers consume as much metabolisable energy [ME] as practicable.
- To optimize the use of the farm automation systems and demonstrate / document improved efficiencies and subsequent effect on the business.
- To achieve industry targets for mating performance within a 10 week mating period, including a 6 week in-calf rate of 79% and 10 week in calf rate greater than 89% i.e. empty rate of less than 11%.
- To continue to document and measure LUDF's influence on changes to defined management practices on other dairy farms.
- To ensure specific training is adequate and appropriate to enable staff members to contribute effectively in meeting the objectives of the farm.
- To operate an efficient and well organised business unit.
- To generate profit through tight cost control with appropriate re-investment and maintenance of the resources.
- To create and maintain an effective team environment at policy, management and operational levels.
- To actively seek labour productivity gains through adoption of technologies and practices that reduces labour requirements or makes the work environment more satisfying.
- To assist Lincoln University to attract top quality domestic and international students into the New Zealand dairy industry.

Ongoing research

- The effect of fertilisers & other farm inputs on groundwater. 10 groundwater monitoring wells sunk to monitor and manage the effect of fertiliser, grazing, irrigation and effluent inputs over a variety of contrasting soil types.
- Effects of eco-n on nitrate leaching and pasture production.
- Pasture growth rates, pests and weeds monitoring.
- The role of nutrition in lameness in Canterbury.
- Resource Inventory and Greenhouse Gas Footprint

Climate

Men Annual Maximum Temperature	32° C
Mean Annual Minimum Temperature	4° C
Average Days of Screen Frost	36 Days per annum
Mean Average Bright Sunshine	2040 Hours per annum
Average Annual Rainfall	666 mm

Farm area

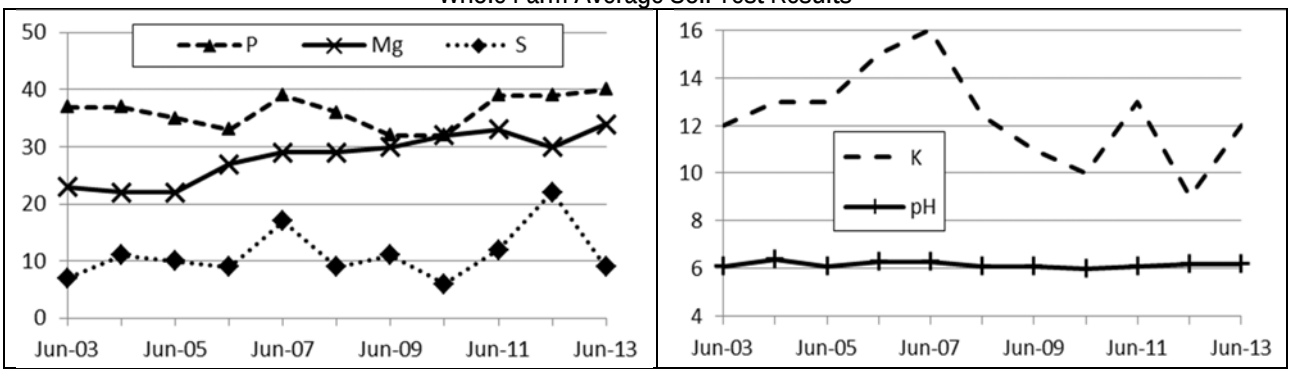
Milking Platform	160 ha
Runoff [East Block]	15 ha
Unproductive land on platform	6.7 ha

Soil types	% Milking Platform		% Milking Platform
Free-draining shallow stony soils (Eyre soils)	5	Imperfectly drained soils (Wakanui soils)	30
Deep sandy soils (Paparua & Templeton soils)	45	Heavy, poorly-drained soils (Temuka soils)	20

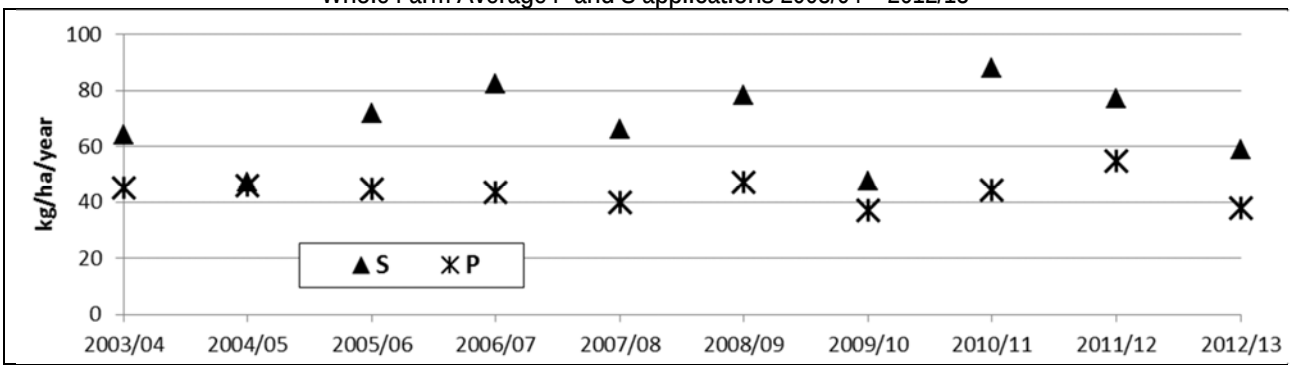
Soil test results and Fertiliser Applications

Target Soil Test Ranges: pH: 5.8 – 6.2, P: 30 – 40, K: 5 – 8, S: 10 – 12, Mg: 20+

Whole Farm Average Soil Test Results



Whole Farm Average P and S applications 2003/04 – 2012/13



Pasture

The milking platform was sown at conversion [March 2001] in a mix of 50/50 Bronsyn/Impact ryegrasses with Aran & Sustain white clovers, and 1kg/ha of Timothy

Paddock	Period Regrassed	Grass Cultivar	Paddock	Period Regrassed	Grass Cultivar
N1	Feb-01	Brons. Imp	S1	Dec-05	Bealey
N2	Feb-11	Trojan	S2	Dec-10	Troj. Bealey
N3	Nov-12	Shogun	S3	Feb-10	Bealey
N4	Feb-01	Brons. Imp	S4	Dec-13	Bealey/Chickory/Plantain/Troj
N5	Dec-11	Shogun	S5	Dec-08	Arrow - Alto
N6	Feb-01	Brons. Imp	S6	Dec-06	Arrow - Alto
N7	Jan -14	Bealey/Chickory/Plantain/Troj	S7	Sep-06	Arrow - Alto
N8	Jan -13	Bealey/Chickory/Plantain	S8	Oct-11	Troj. Bealey
N9	Oct-13	Bealey/Chickory/Plantain/Troj	S9	Dec-09	Bealey
N10	Jan-12	Tetraploids	S10	Feb-05	Bealey
N11	Nov-07	Bealey	All paddocks also sown with clover		

Irrigation and effluent system

Centre-pivots	127 ha
Long Laterals	24 ha
K-Lines	10 ha
Irrigation System Capacity	5.5 mm/day
Length of basic pivot	402
Well depth	90m

- A full rotation completed in 20.8 hours for 5.5 mm [at 100% of maximum speed].
- Average Annual Rainfall = 666 mm. Average irrigation input applies an additional 450 mm.
- Average Evapotranspiration for Lincoln is 870 mm/year.

Effluent

- Sump capable of holding 33,000 litres and a 300,000 litre enviro saucer.
- 100 mm PVC pipe to base of North Block centre pivot, distribution through pot spray applicators.

Mating programme - Spring 2013

KiwiX DNA for 365 cows (F8-F16); Holstein Friesian Daughter Proven for 280 cows (F0-F7); KiwiX Premier Sires Daughter proven for yearling Heifers. AI mate for 3 weeks in heifers and 6 weeks in main herd then follow with Jersey bulls. Heifers start mating 10 days early. 10 weeks mating for milking herd. Expect to rear 150 heifers.

Herd details – February 2014

Breeding Worth (rel%) / Production Worth (rel%)	129 / 49% 158 / 73%
Recorded Ancestry	99%
Average weight / cow (Dec) – Herd monitored walk over weighing	474 kg [Dec 2012]
Calving start date	Heifers – 23 July, Herd 3 August 2014
Est Median calving date	21 August 2013
Mating start date	25 October 2013

Empty rate (nil induction policy) after 10 weeks mating - 12% (2013-14 mating). 6 week in-calf rate 78%.

	2002/03	Average 03/04 - 06/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
Total kg/MS supplied	228,420	277,204	278,560	261,423	273,605	264,460	297,740	300,484
Average kg/MS/cow	381	425	409	384	415	395	471	477
Average kg/MS/ha	1414	1720	1744	1634	1710	1653	1861	1878
Farm Working Expenses / kgMS	$2.98	$2.68	$3.37	$3.88	$3.38	$3.86	$3.91	$3.84
Dairy Operating Profit/ha	$1,164	$2,534	$8,284	$2,004	$4,696	$6,721	$4,553	$4665
Payout [excl. levy] $/kg [Milk price + div.]	$4.10	$4.33	$7.87	$5.25	$6.37	$7.80	$6.30	$6.12
Return on Assets	4.4%	6.18%	14.6%	4.8%	7%	7%	6%	6%

Stock numbers	2002/03	Average 03/04 - 06/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
1 July cow numbers	631	675	704	704	685	694	665	650
Max. cows milked	604	654	680	683	660	669	632	630
Days in milk			263	254	266	271	272	273
Stocking rate Cow equiv. / ha	3.75	4.05	4.2	4.3	4.13	4.18	3.95	3.94
Stocking rate Kg liveweight / ha	1,838	1964	2,058	2,107	1,941	1914	1860	1878
Cows wintered off No. Cows / Weeks	500 / 8	515 / 7.8	546 / 9	547 / 7	570 / 9	652 / 8.4	650 / 9.8	650/9.8
No. Yearlings grazed On / Off	0/118	0/157	0/171	0/200	0/160	0/166	0/141	0/138
No. Calves grazed On / Off	0/141	0/163	0/200	0/170	0/160	0/194	0/190	0/156
Est. Pasture Eaten (Dairybase) (tDM/ha)			17.9	17.2	16.2	16.9	17.3	16.8
Purch. Suppl - fed [kgDM/cow]	550	317	415	342	259	463	359	434
Made on dairy/platform [kgDM/cow]	0	194	95	64	144	160	154	93
Applied N / 160 eff. Ha			164	200	185	260	340	350

Staffing & Management

Roster System – 8 days on 2 off , 8 days on 3 off

Milking Times - Morning: cups on 5.00am
- Afternoon: cups on 2.30pm

Contents

LUDF Budget and Expenses to date:

Year ending May 31		2012 -13 Actual	2013/14 Budget	Actual to end Jan	Budget to End Jan	Variance (Act-budg)	Notes
Milk production (kgMS)		300,484	300,000	196,621	204,106		
	160ha	1,878/ha	1,875/ha				
Peak Cow Nos and Prod.		630	630				
Staff		3.7	3.7				
Income	Milksolid Payout $/kgMS	$5.80/kgMS	$8.30				
	Dividend /share	$0.32/share	$0.32/share				
	Milksolid Revenue	$1,754,827	$2,490,000	$1,138,442	$785,808	$352,634	
	Dividend	$96,000	$96,000			$0	
	Surplus dairy stock	$182,337	$139,015	$94,600	$70,223	$24,377	
Stock Purchases		-$25,740	-$23,200	-$26,640	-$23,200	-$3,440	
Gross Farm Revenue		**$2,007,424**	**$2,701,815**	**$1,206,402**	**$832,831**	$373,571	
Expenses							
Cow Costs	Animal Health	$60,886	$60,066	$37,885	$39,669	-$1,784	
	Breeding Expenses	$51,644	$48,128	$41,492	$41,595	-$103	
	Replacement grazing & meal	$163,852	$148,405	$105,693	$93,638	$12,055	1
	Winter grazing - Herd incl. freight	$137,904	$154,539	$169,710	$140,439	$29,271	2
Feed	Grass silage purchased	$93,492	$177,534	$172,189	$177,534	-$5,345	
	Silage making & delivery	$9,087	$9,216	$0	$9,216	-$9,216	7
	Eco-n & Gibberellin	$58,441	$10,487	$7,707	$5,000	$2,707	
	Nitrogen	$112,973	$69,949	$50,305	$56,017	-$5,712	8
	Fertiliser & Lime	$33,288	$27,901	$32,608	$24,000	$8,608	3
	Irrigation - All Costs	$55,471	$70,600	$34,924	$43,335	-$8,411	9
	Re-grassing	$14,790	$29,688	$29,686	$29,688	-$2	
Staff	Employment	$217,865	$248,037	$144,876	$162,554	-$17,678	10
Land	Electricity-farm	$27,049	$26,600	$18,856	$14,860	$3,996	4
	Administration	$21,528	$24,700	$11,542	$14,319	-$2,777	
	Freight & Cartage	$89	$800	$7,235	$3,310	$3,925	5
	Rates & Insurance	$21,020	$21,020	$0	$0	$0	
	Repairs & Maintenance	$61,766	$54,500	$44,334	$37,030	$7,304	6
	Shed Expenses excl. power	$7,560	$9,850	$5,480	$8,310	-$2,830	
	Vehicle Expenses	$34,922	$31,336	$20,717	$20,965	-$248	
	Weed & Pest	$1,340	$500	$509	$500	$9	
Cash Farm Working Expenses		$1,184,967	$1,223,857	**$935,748**	**$921,979**	$13,769	
Depreciation est.		$105,000	$116,000				
Total Operating Expenses		$1,289,967	$1,339,857				
Dairy Operating Profit		$717,457	$1,361,958				
DOP		**4,484/ha**	**8,512/ha**				
Cash Operating Surplus		$822,457	$1,477,958				
Cash Operating Surplus per ha		**5,140/ha**	**9,237/ha**				

Increases against budget

1. **Replacement Grazing costs.** This over run has occurred due to having an extra 25 AI heifers to rear through to weaning, more meal and more milk powder was used but this has also had an effect on a higher than budgeted income in surplus AI heifers to sell.
2. **Winter Grazing.** This is due partly to having to find extra grazing for later calving cows due to having heifers home over the winter period eating feed that we would have had for these later calving cows and also paying slightly higher winter grazing than we had budgeted for.
3. **Fertiliser and Lime.** The over run here is due to not budgeting enough in our original budget. Our annual soil test indicated we needed more than we originally budgeted.
4. **Farm electricity.** This is going to end up more than we budgeted partly because of the twice daily hot washes required for the milk monitoring meters and also the extra hour a day that the milking machines start up pre milking to put a rinse through the plant to remove detergent residue.
5. **Freight and Cartage.** This is higher than budgeted due to extra trucking of later calving cows that we had to find grazing for off farm.
6. **Repairs and maintenance.** The two main over runs in the budget in repairs and maintenance is that we had to replace our submersible pump that supplies our stock water and cowshed water .We also had to replace our underpass effluent pump that was drowned during the winter when we had the heavy rain.

Savings against budget

7. **Silage purchased & delivery.** This amount has been budgeted to making silage off the milking platform but we have not made any to date this season
8. **Nitrogen.** Have used what we budgeted for but the cost per tonne was considerably reduced compared to our original budgeted price.
9. **Irrigation.** Has cost less this season due to irrigating fewer days than budgeted (18 days less) due to the wetter cooler summer thus decreasing power use and spending slightly less on R & M to date.
10. **Employment.** This is well below budget due to losing a staff member at the end of October and only replacing him at the beginning of this month. This has resulted in using casuals that we would not normally use .We have also not paid as high a salary's as budgeted to date.

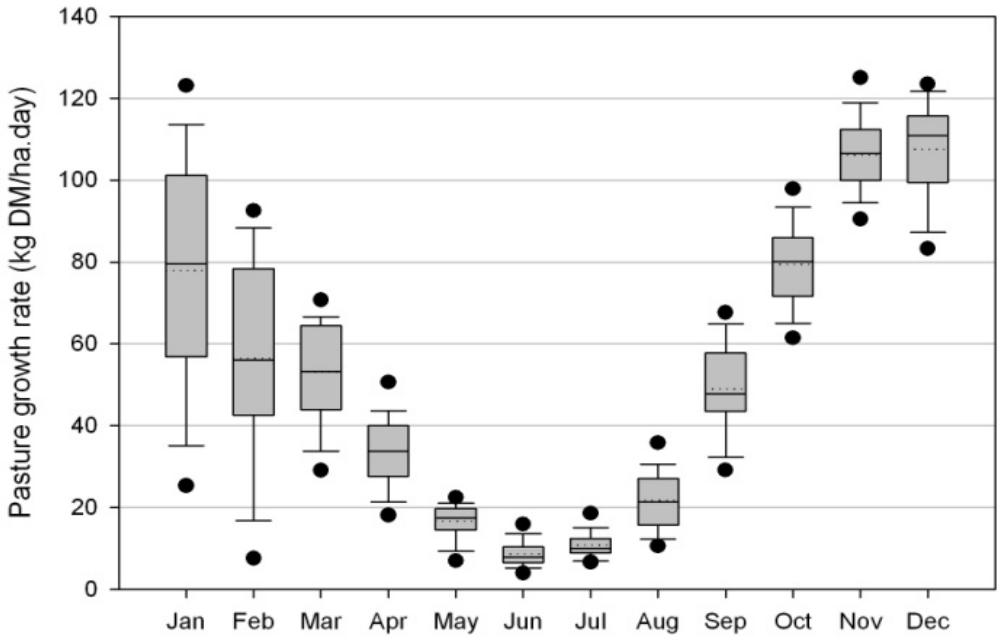
Pasture Growth

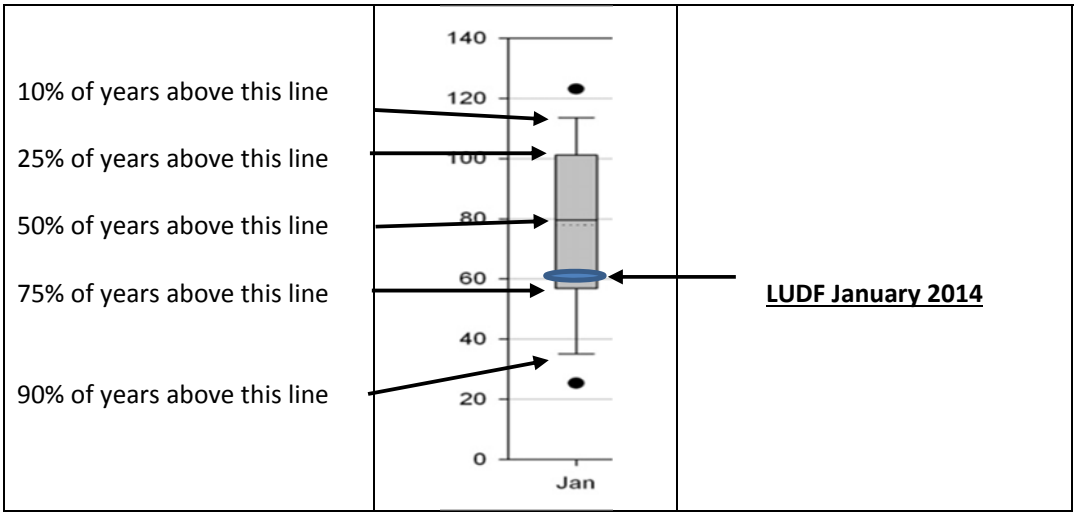
Variability in pasture growth

David Chapman
DairyNZ Lincoln

- LUDF recorded low pasture growth rates in January 2014: about 60 kg DM/ha per day compared to 80 – 100 in 2010 – 2013.
- Across the region, growth rates were generally low post-Christmas
- Variation between years in pasture growth is normal, even when irrigation is available to 'neutralise' the effects of variation in summer and autumn rainfall
- The graph below shows the distribution of growth rates for each month of the year for irrigated dairy pasture at Lincoln. It is based on 30 years of daily climate data which have been run through a computer simulation model.
- This graph shows that the January 2014 growth rate at LUDF fell in roughly the lowest 1/3 of years based on the long-term climate data.
- In other words, 60 kg DM/ha per day in January can be expected about one year in every three or four years

Pasture growth rates for Lincoln modelled using 1966-1996 climate data





Of the 12 months per year, January and February show the most variation in pasture growth. Why?

- After water, temperature and light are the most important environment factors controlling pasture growth
- If water is controlled by irrigation, this leaves temperature and light as the main suspects
- Light does not vary much between years – it can only be affected by cloudy weather
- So temperature is the most likely explanation
- LUDF recorded temperatures of 15 – 16 degrees during January
- Ryegrass growth rate is highest when temperatures are about 18 – 20 degrees
- So cooler weather could have caused the lower growth rates

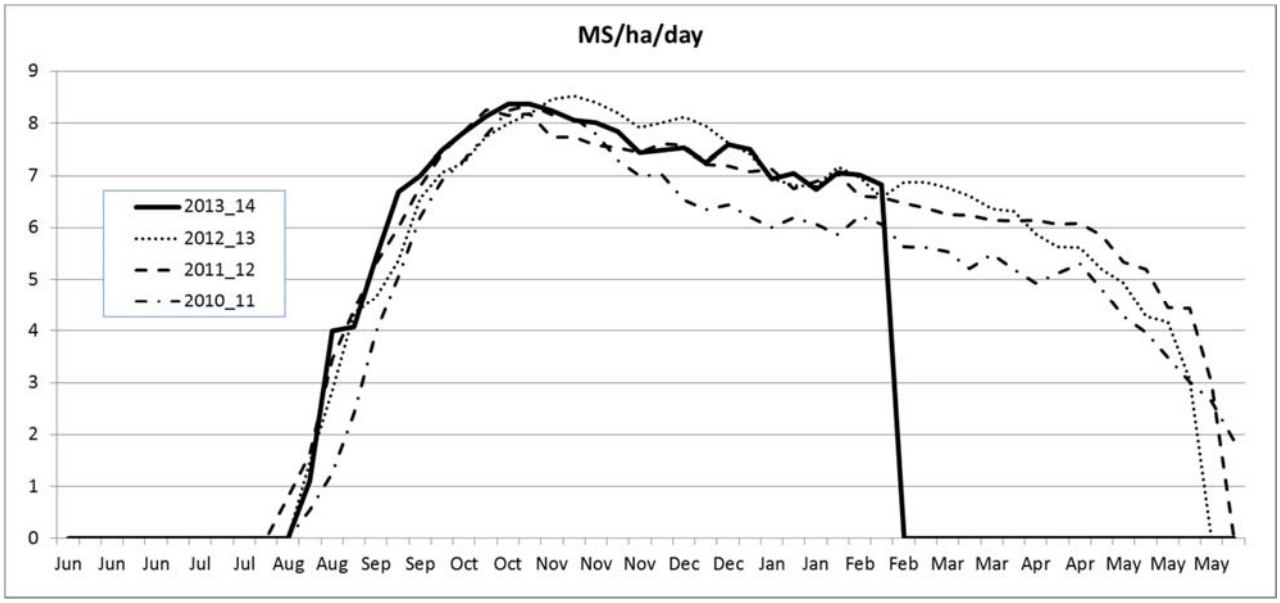
- A question that comes up is: temperatures in spring are commonly about 15 to 16 degrees too, but the growth rate is higher than 60 kg DM/ha/day – why?

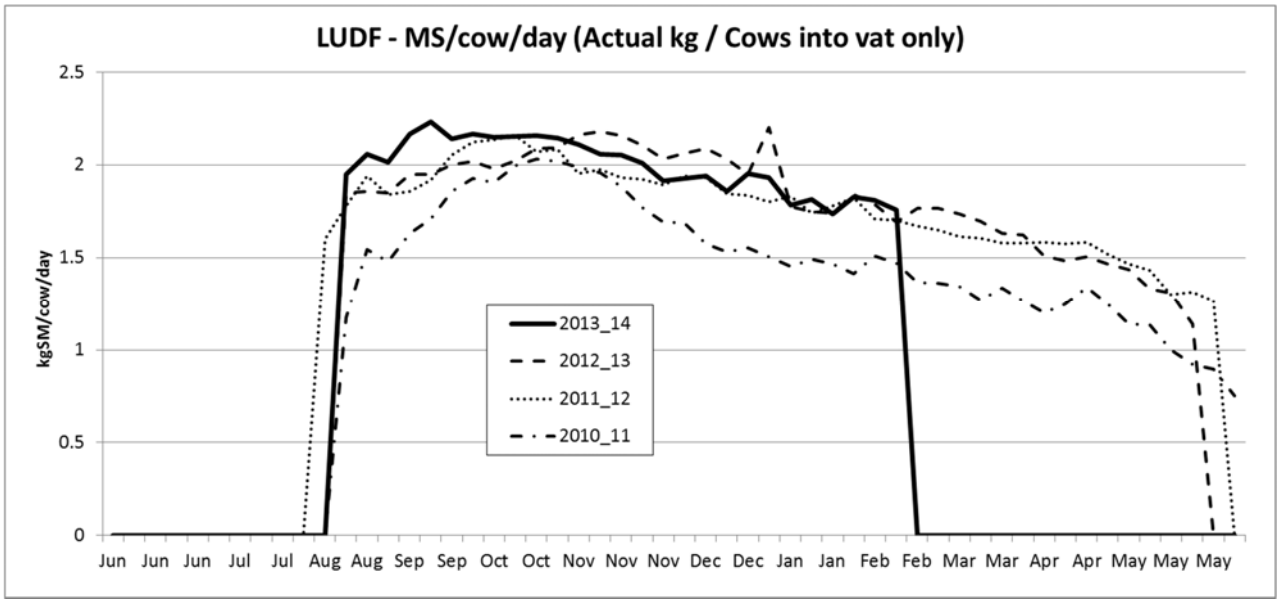
- Two things are involved:

    - In mid-late spring, ryegrass is going through reproductive growth, which means the plant is less affected by environmental variation, and its physiology is 'geared' for high growth rates regardless. Whereas, in January, plants are in transition back to vegetative growth and have to replace tillers that flowered in the spring.
    - Light intensity is increasing through spring - days are getting longer, and radiation intensity is increasing. Whereas in January it is starting to decrease as days get shorter. Plants sense the seasonal changes in daylength and respond quite differently to increasing light compared to decreasing light.

Milk Solids Production to date:

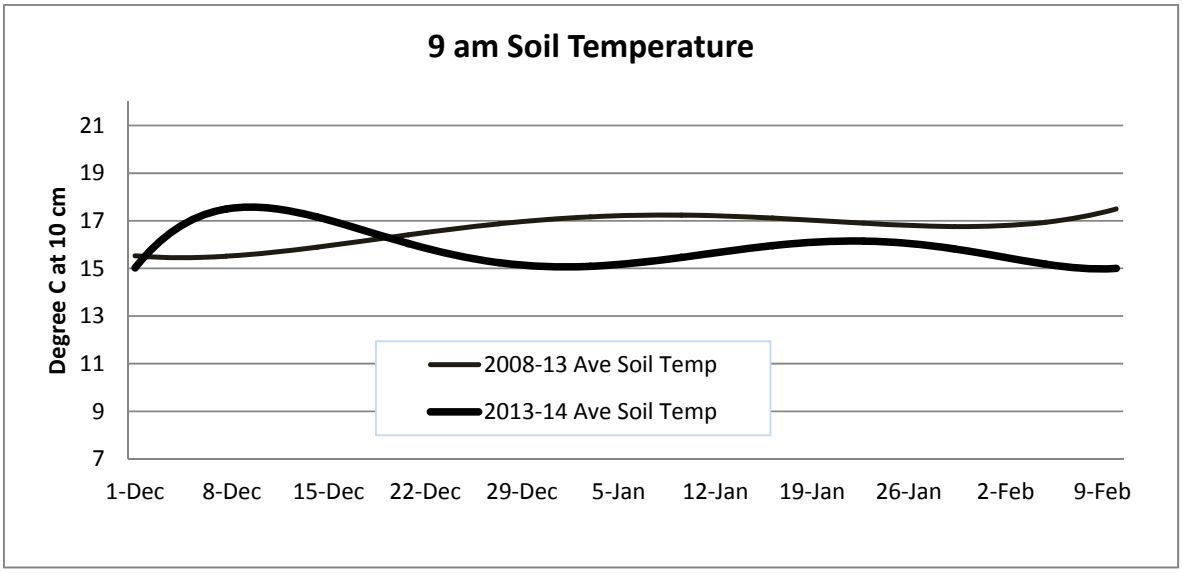
Milk solid's production both on a per cow and per ha basis is tracking very similarly to the last 2 seasons.

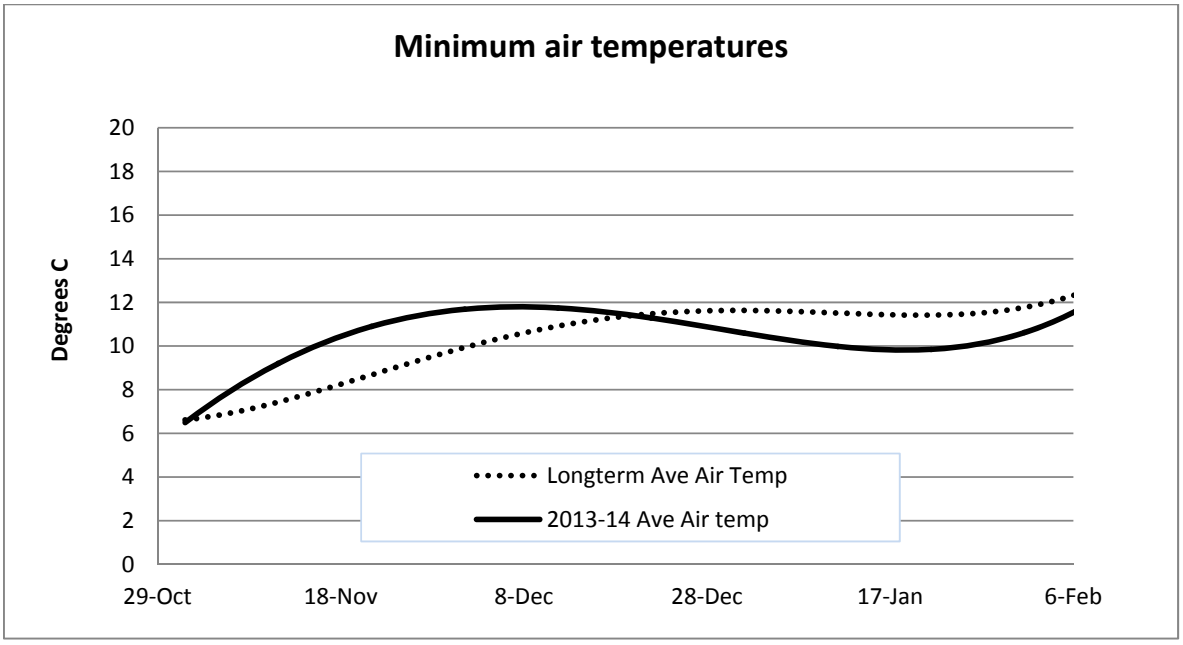


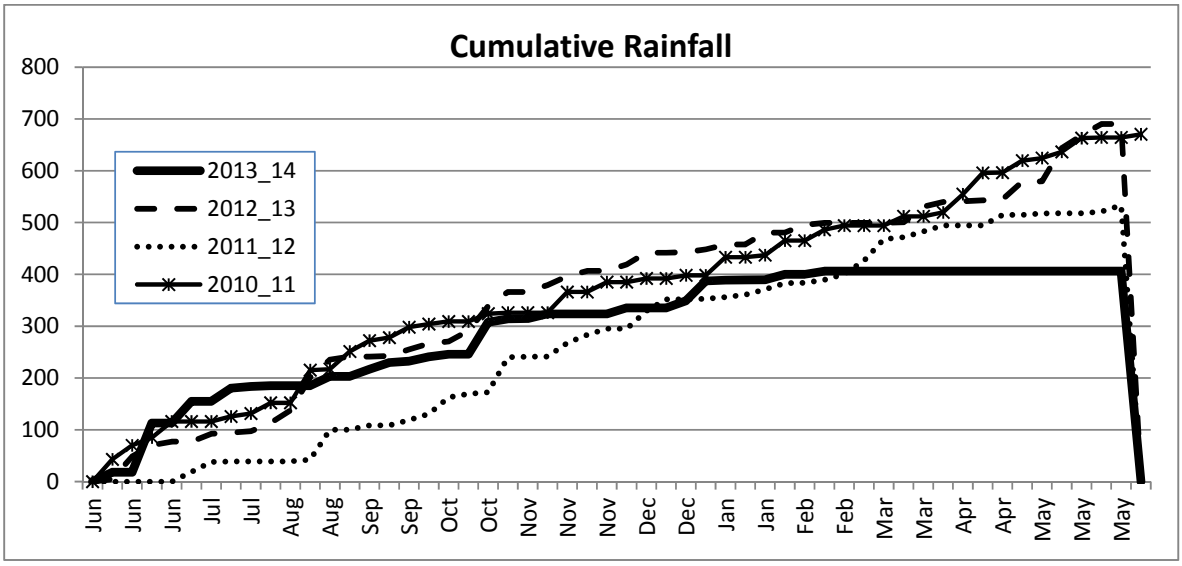


Growing Conditions

The summer has been characterised by soil temperatures which, during January sat around 1 to 1.5 degrees cooler than normal. There was also a greater variability in minimum night time air temperatures at the Broadfields climate station. The trend was for cooler average air temperatures which most likely drove the low soil temperatures.

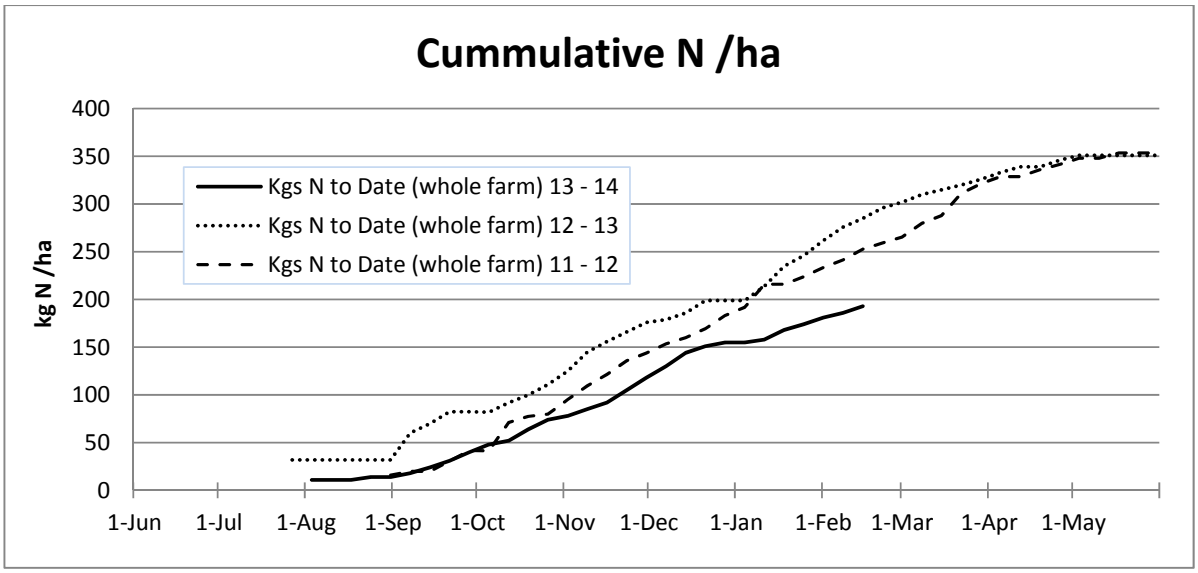






Nitrogen Use

As can be seen from the chart below: Season to date, LUDF has used around 70 % of the applied bag Nitrogen fertilizer that it used in the two previous seasons . The total n used [average over the whole farm] in the previous 2 seasons was 350 kg/ha, this season the intention is to restrict that amount to 260kg N/ha.



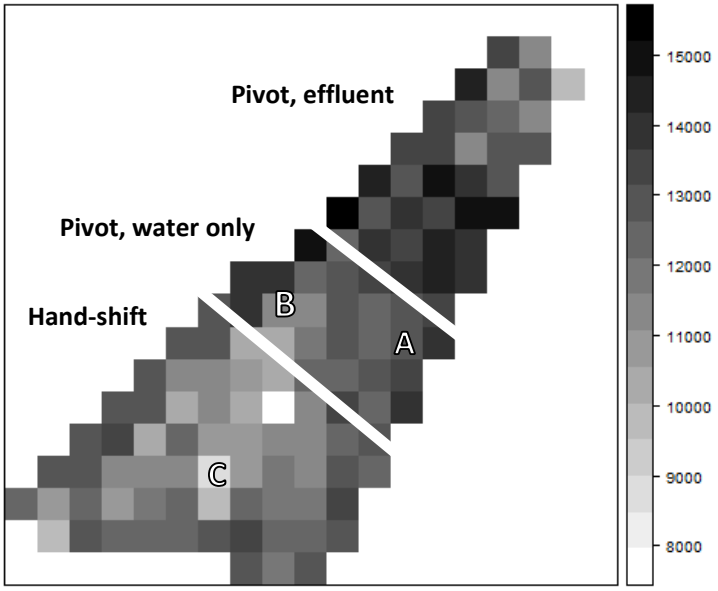
Nitrogen response of areas of a paddock with differing yield

Samuel Dennis, Westlea Clarke-Hill, Nick Reed, Karren O'Neill, Robyn Dynes.

samuel.dennis@agresearch.co.nz

Pasture yields can vary markedly from one area of a paddock to another, and the variation within a paddock can be even greater than the variation between different paddocks on a farm. We can map the yield variation within a paddock using technology such as the C-Dax pasture meter, and are currently mapping six paddocks on LUDF to assess how we can use this data to inform farm management. See the October 2013 field day handout for more information on this trial (funded by MPI, DairyNZ and Ravensdown).

This map shows the consumed pasture yield measured on paddock N3 over the majority of the last season (the total yield here is slightly less than that reported by the farm as not every grazing was measured). The highest yield is from the inside of the pivot which receives both water and effluent, the next highest is from the outer pivot which receives water only, and the lowest yields are under the hand-shift irrigators.



Although there are many different factors that will contribute to pasture yield, this map shows that on this paddock the largest cause of this variation is probably water, as there is such a large difference between the pivot and hand-shift area. Fertility may also be involved given the difference between the effluent and non-effluent area. Nitrogen is unlikely to be a major cause of variation, as the entire paddock receives about the same level of N inputs – the non-effluent area receives urea, while the effluent area receives a lower rate of urea to account for the fact that there is N input from the effluent itself, to achieve approximately the same rate of N across the paddock.

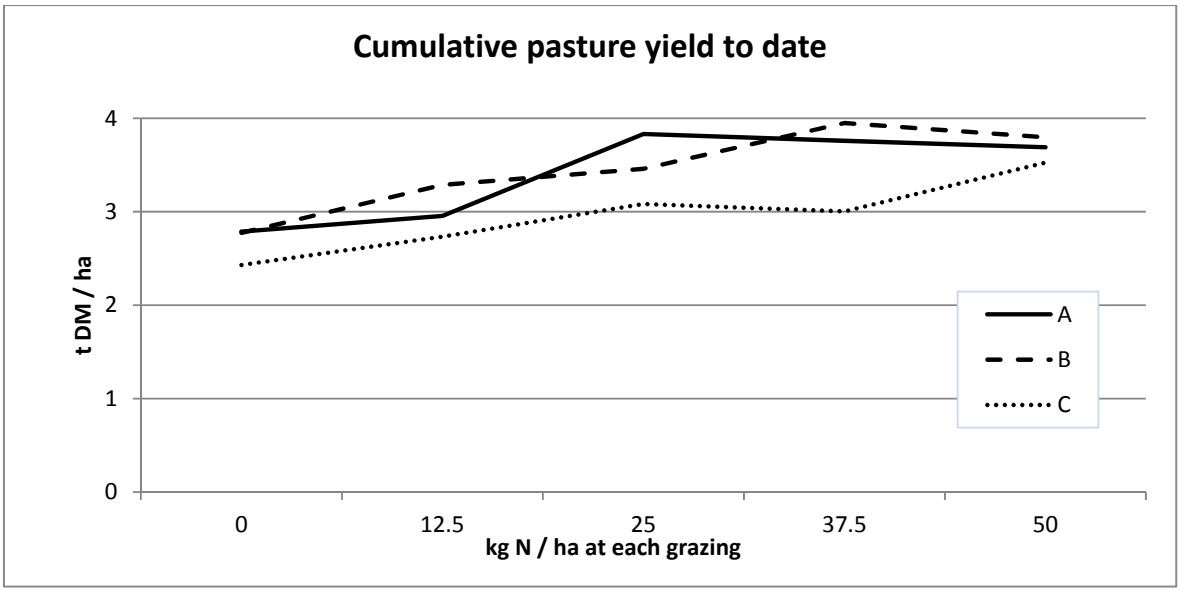
Should knowing the variation in yield affect our decisions around N fertiliser? It is possible to apply variable-rate N to give every area of this paddock a targeted rate of N. If we were to do this based on a pasture yield map, we have at least two options:

1) Apply more N to the areas of lower yield, to improve their yield.
   This is unlikely to be an efficient use of N. The low yielding areas already receive just as much N as the high yielding areas, yet are producing less pasture. Growth is therefore unlikely to be limited by N, but by other factors such as water inputs, soil and pasture conditions. We may increase yield somewhat by adding more N, but would need to change these other factors to substantially improve yields.

2) Apply less N to the areas of lower yield, and more to the areas of higher yield.
   If low-yielding areas are limited by something other than N, they may be unable to use all the N we are applying efficiently. It may make sense to reduce the N application to them to avoid wasting fertiliser without greatly reducing yields.
   If the high-yielding areas do not have these limitations, they may actually be able to efficiently use more N than we are currently applying. It may make sense to increase the N applications to these areas. We might be able to do this without changing the total farm N usage if we are also reducing N inputs to other areas.

To work out what the ideal N rate would be for areas with differing pasture yield, we selected three sites in this paddock that last year had relatively high, medium and low pasture yield (marked on the map as A,B,C). All sites were outside the effluent area to avoid N input from effluent and ensure all N inputs could be controlled.

At each site we applied five different fertiliser rates (0, 12.5, 25, 37.5 and 50 kg N/ha) following each grazing, with four replicates, starting in November. The remainder of the non-effluent area on the farm receives 25 kgN/ha following each grazing. Pasture yields were determined by mowing to grazing height immediately before grazing, with cows then grazing across all the sites to give natural trampling and excreta input.



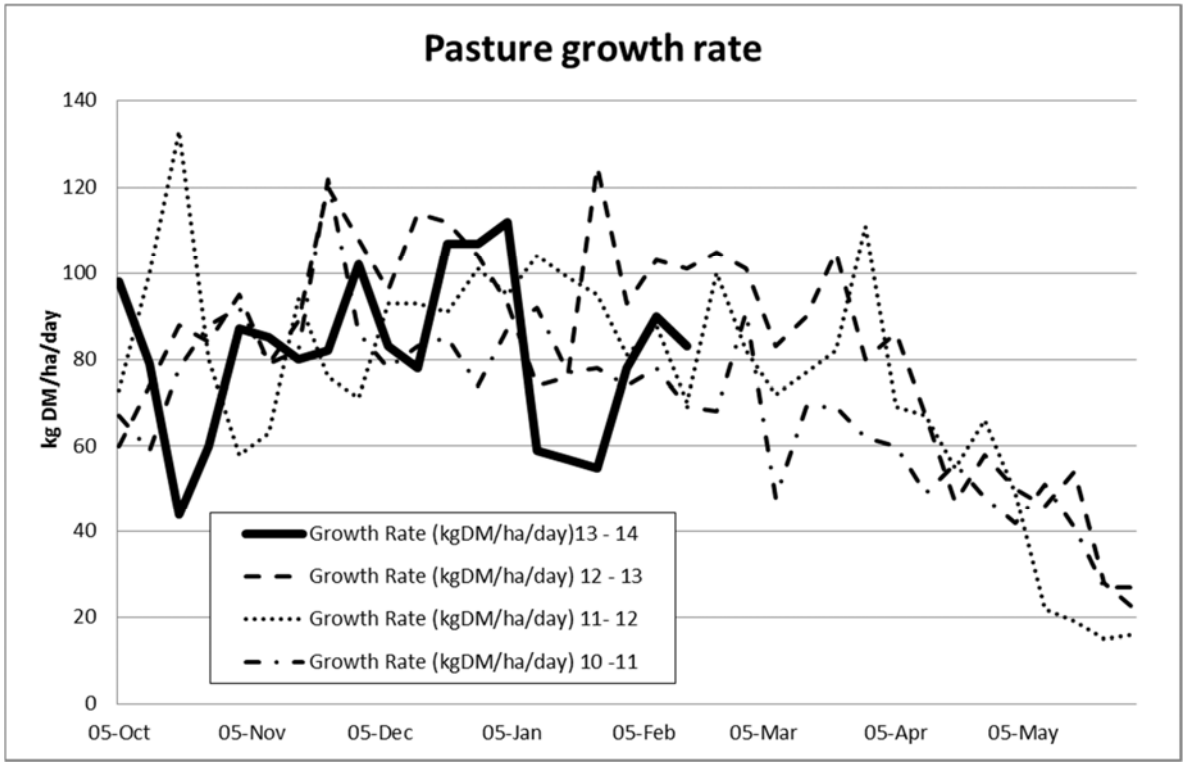
Interim results to date indicate pasture yield increases up to 25 kgN/ha. Above that rate the yields are variable, suggesting little advantage in applying more than 25 kgN/ha based on the results to date.

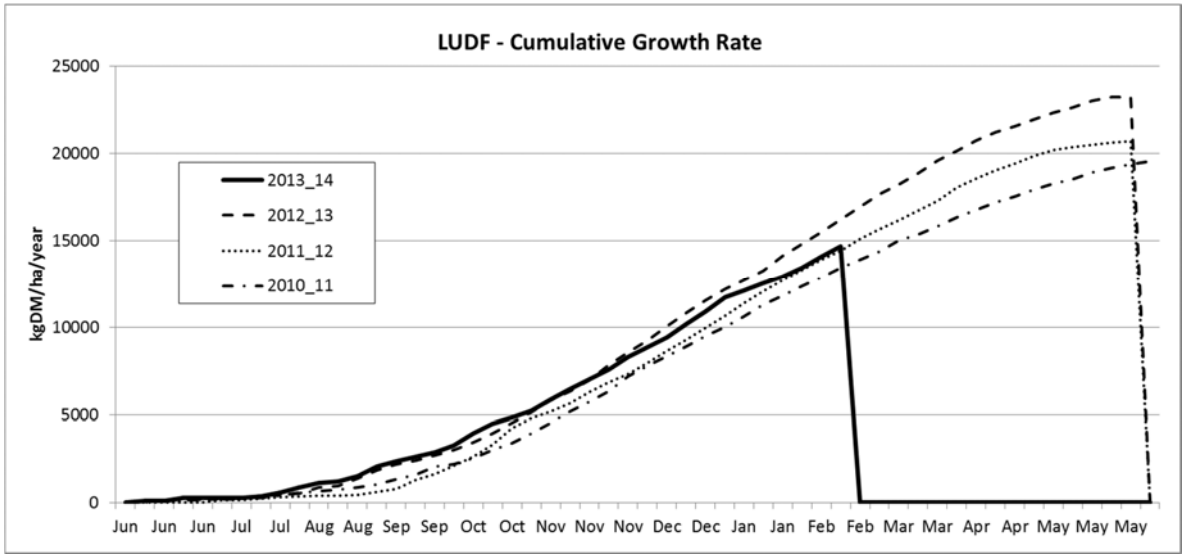
Although area C is producing less overall than A and B, there is no clear difference in the responsiveness of the three areas to N. However we have only had four grazings on this trial so far and are continuing our measurements, differences may emerge over the course of the season.

At this stage we are comfortable that LUDF is unlikely to be greatly compromising yield by restricting N to 25 kgN/ha per grazing to stay within the farm's self-imposed N loss cap. We are still working out whether areas of differing pasture yield should receive different rates of N fertiliser.

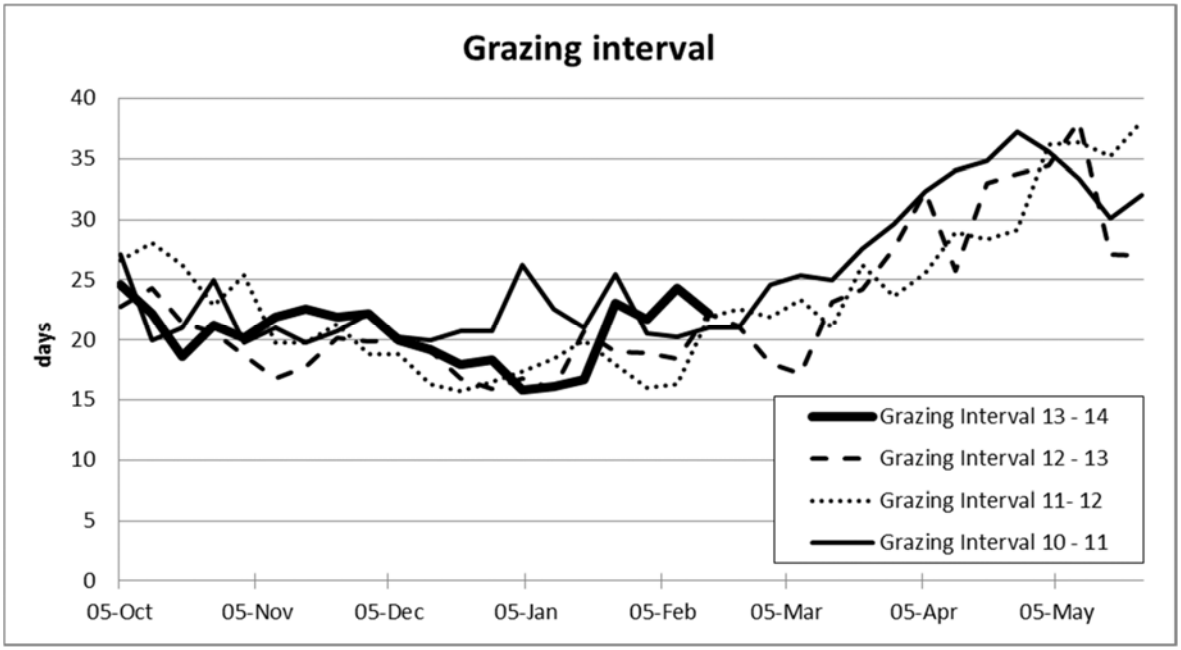
Pasture Production and Management

The farm has struggled to feed cows on pasture alone since mid Spring. Pasture growth rates have almost never been high, and there have been 2 periods [in October and January] where very large deficits have occurred.

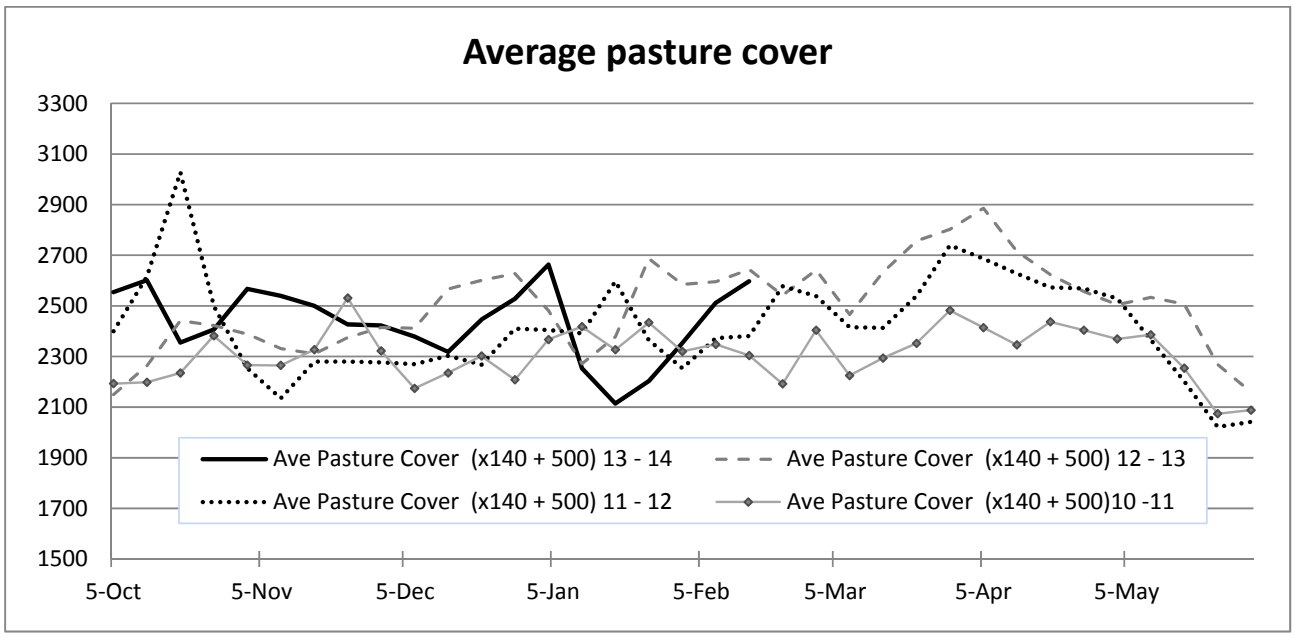




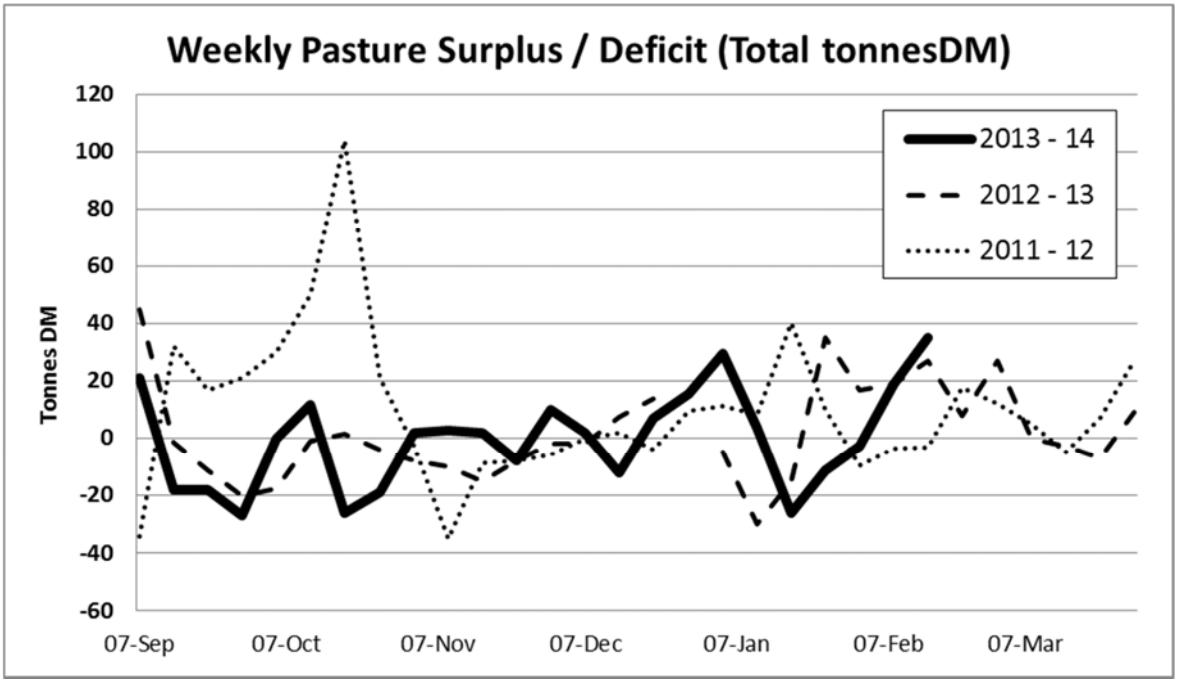
The grazing interval [round length] has sat roughly in line with previous seasons. We have found that with the lower growth rates that we have experienced, the very short rounds [16 – 17 days] are not feasible.



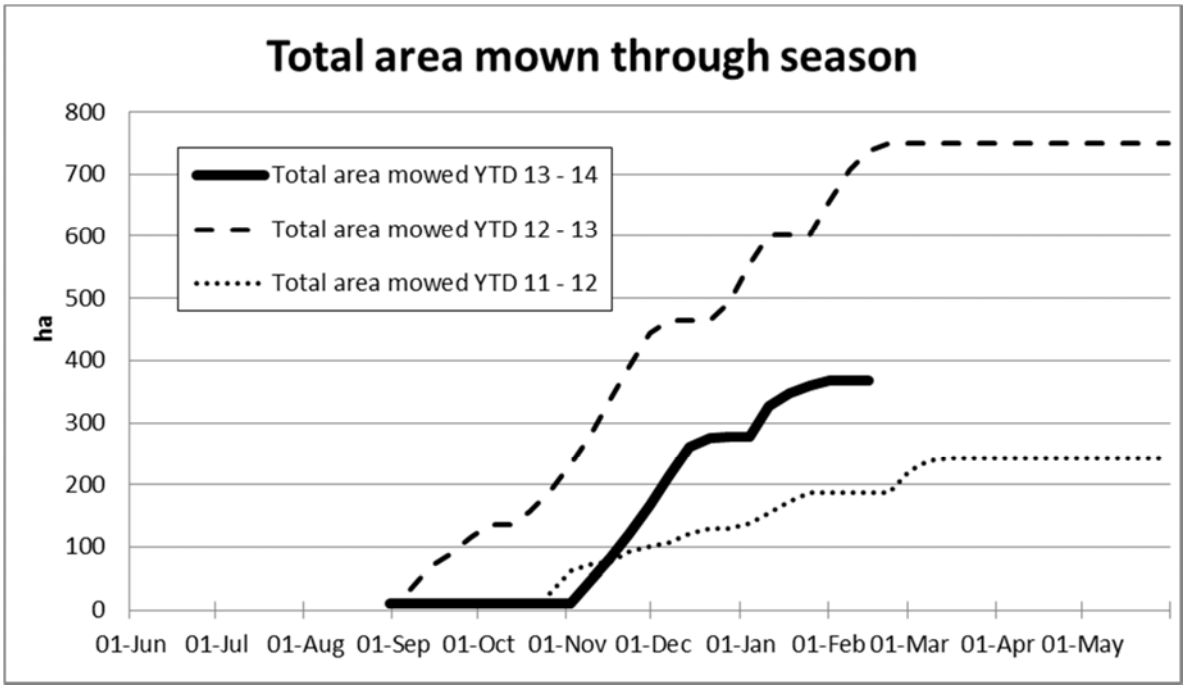
Pasture cover has been a challenge to manage as a result of the erratic growth rates. The rapid decline in APC experiencesd in January [see below] as a result of getting caught on a short round with low pasture growth rates required a lot of supplement and careful management to recover from.



As can be seen below the farm has spent a considerable time in pasture supply deficit this season, and any surplus has been quite small.

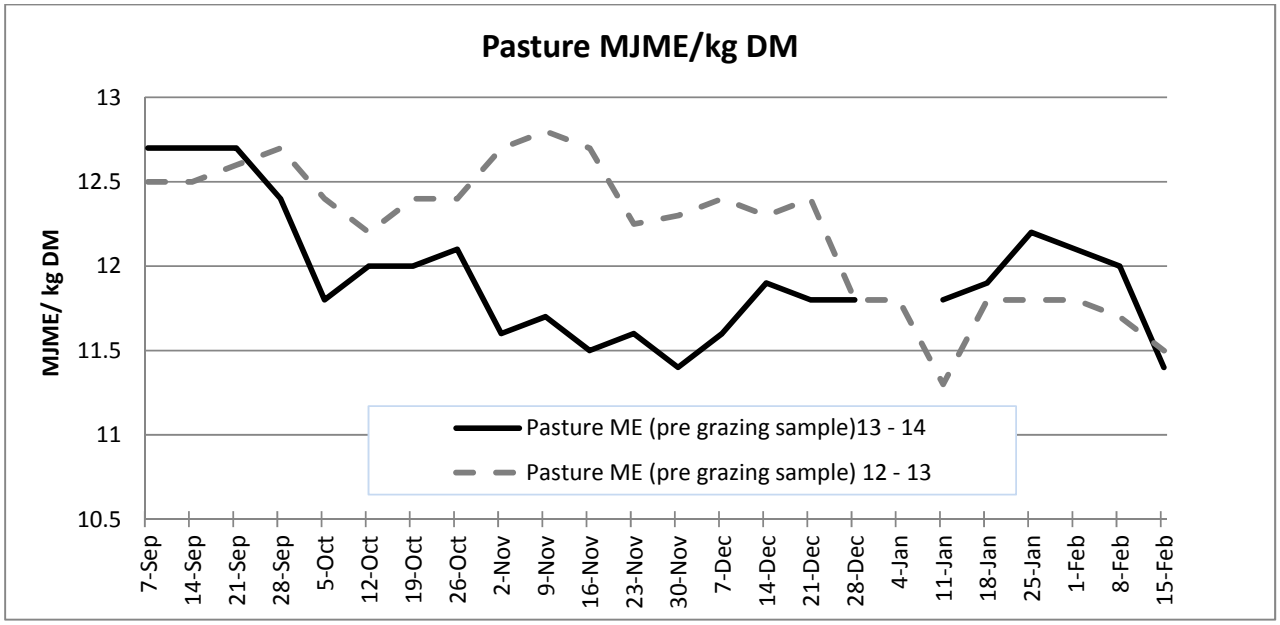


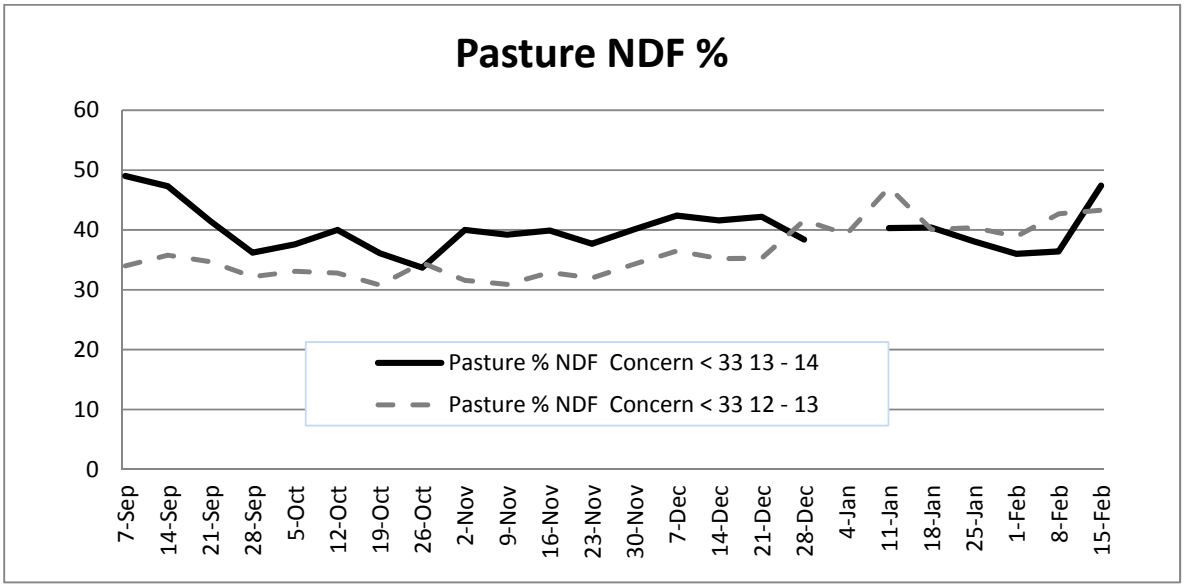
Some pre mowing to assist cow intake has occurred in a very focused way this season. Despite having less feed on offer there were still opportuinites to achieve good pasture residuals. We expect that total mown area this season will be less than half the area mown last season.



Pasture quality

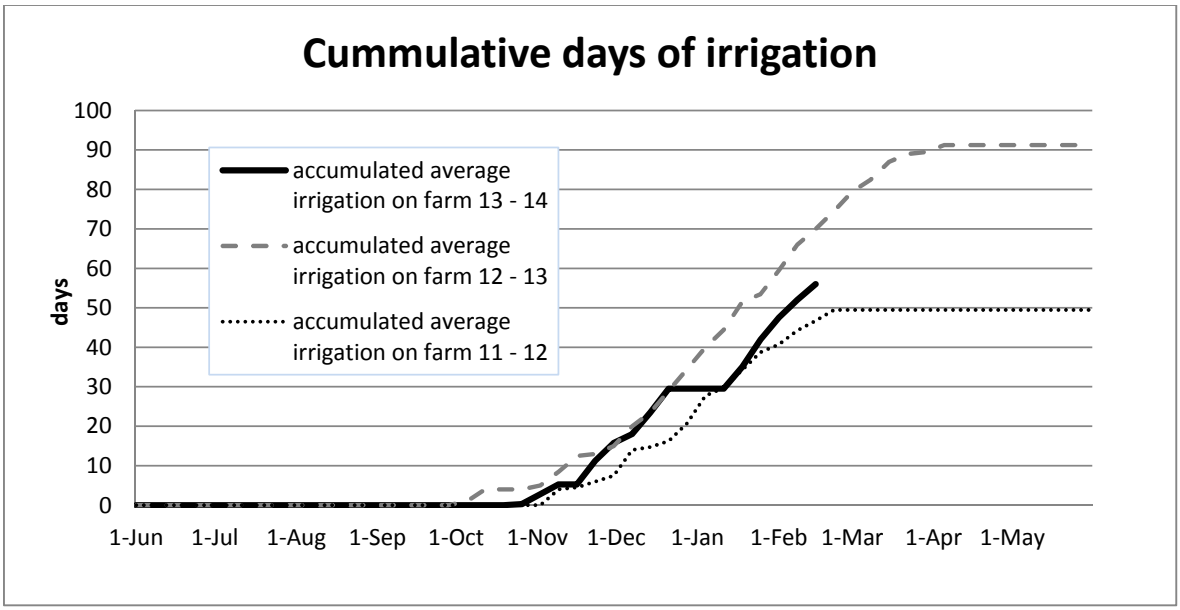
Lumpy growth, as in the photo above showing obvious dung and and urine patches, and less growth between the patches has routinely been evident this year and contributed to lower pasture quality. Pasture quality [ME] has typically been lower this season than last season. NDF levels have tended to be higher.





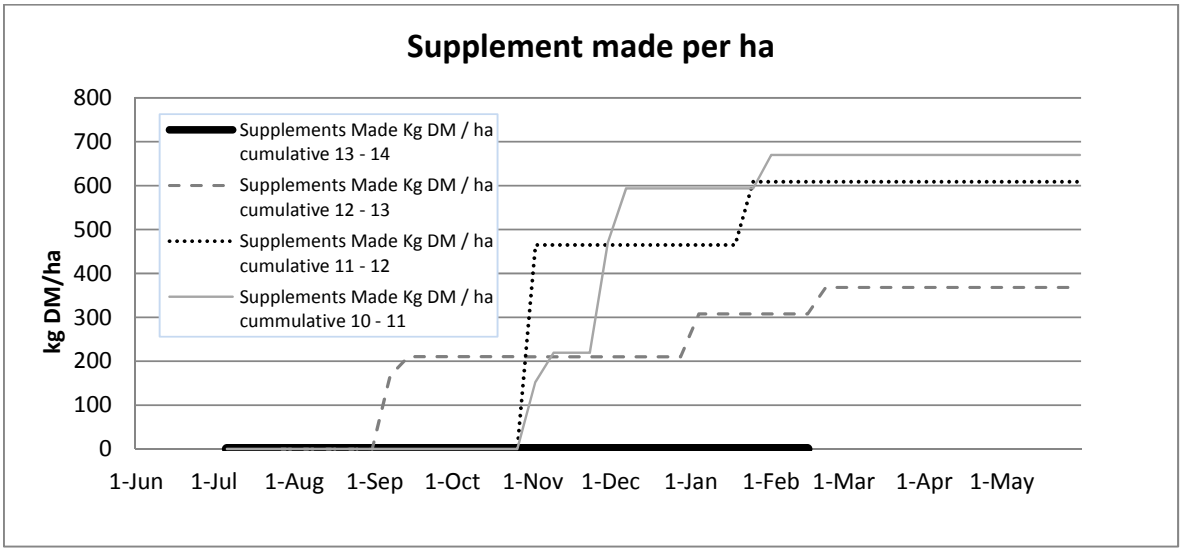
Irrigation

This season to date has required moderate irrigation inputs, however there have been a couple of short periods where the system has struggled to keep up with evapotranspiration.

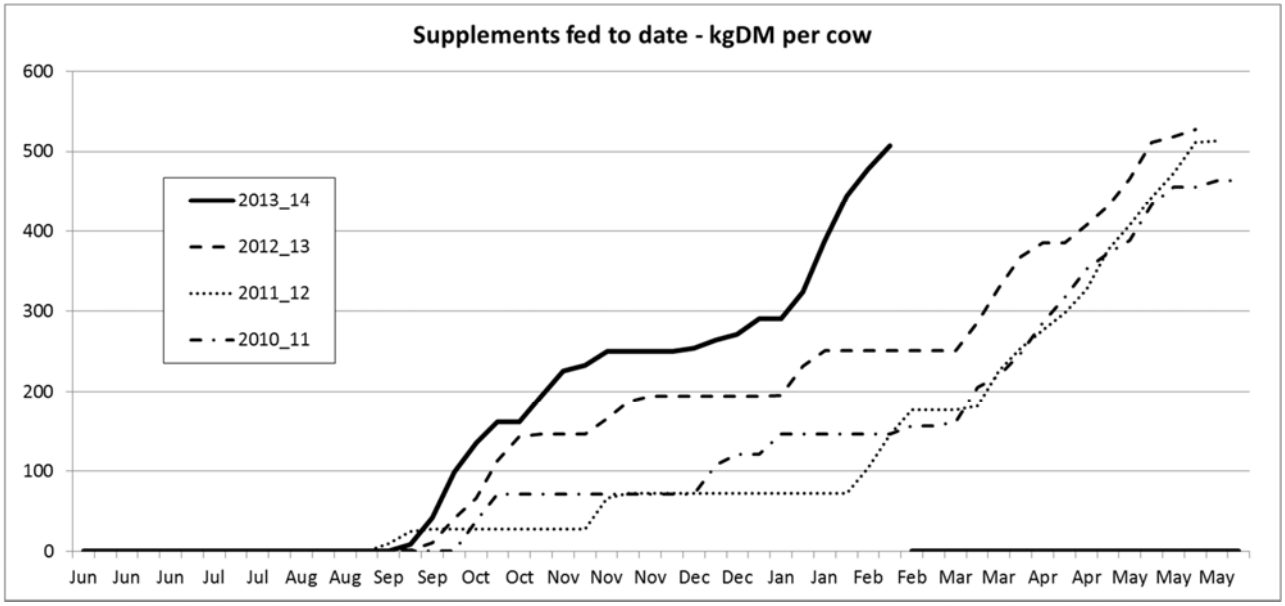


Supplements

Our only supplement is balage, this year we have successfully used lucerne balage in addition to grass silage. We have made no supplement on the platform this season.

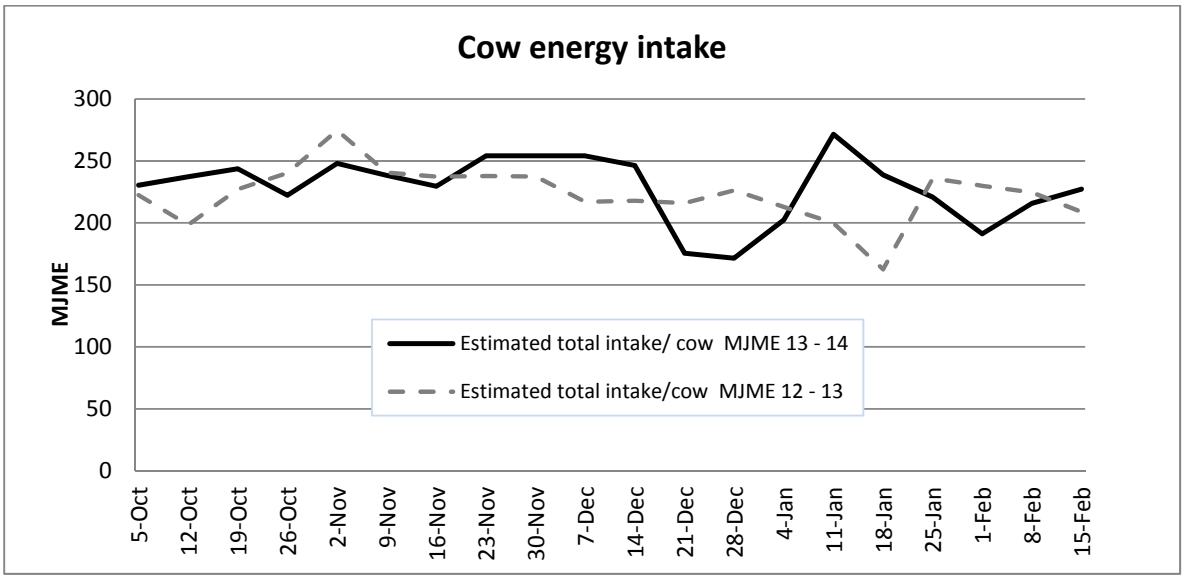


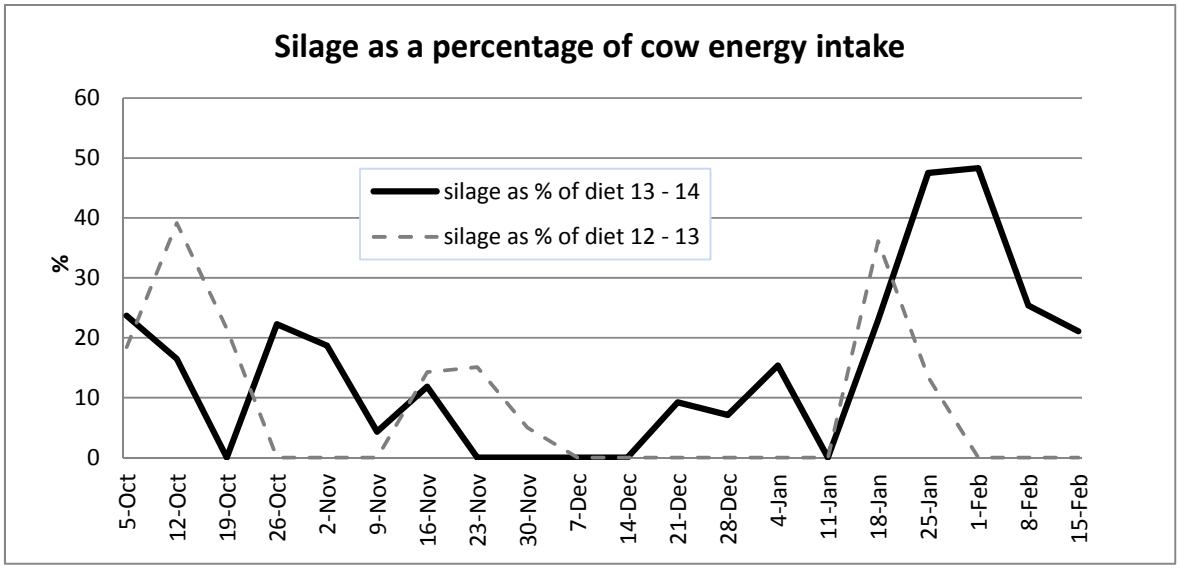
All supplement used [balage] has been bought in. We have used much more total supplement to date. In a "normal" season LUDF might have fed 150 – 250 kg DM per cow by this time. We have already fed 500 kg DM/cow, a figure which exceeds the normal total use for a season.



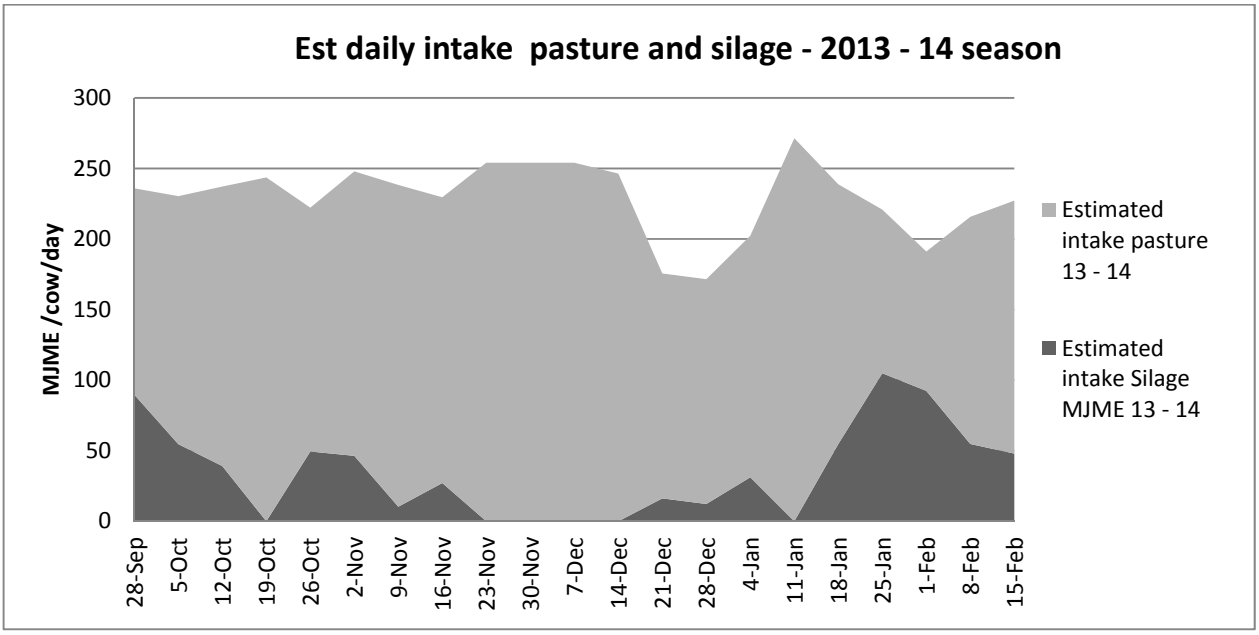
Cow Intake

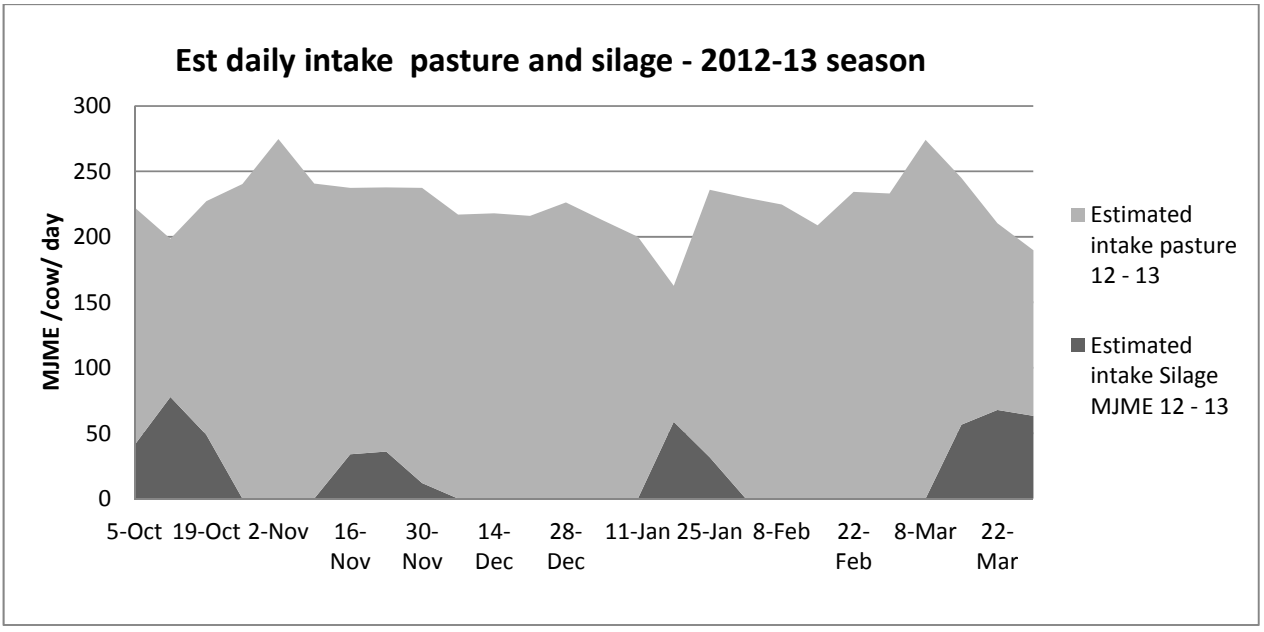
Cows intake has now suffered as a result of the changed N use policy and the lower pasture growth on farm. A result is the percentage of their diet coming from supplement is much higher. See the charts below where it can be seen that cows have in some weeks consumed almost half of their diet as silage and the duration of silage feeding this season compared to last season is also longer.



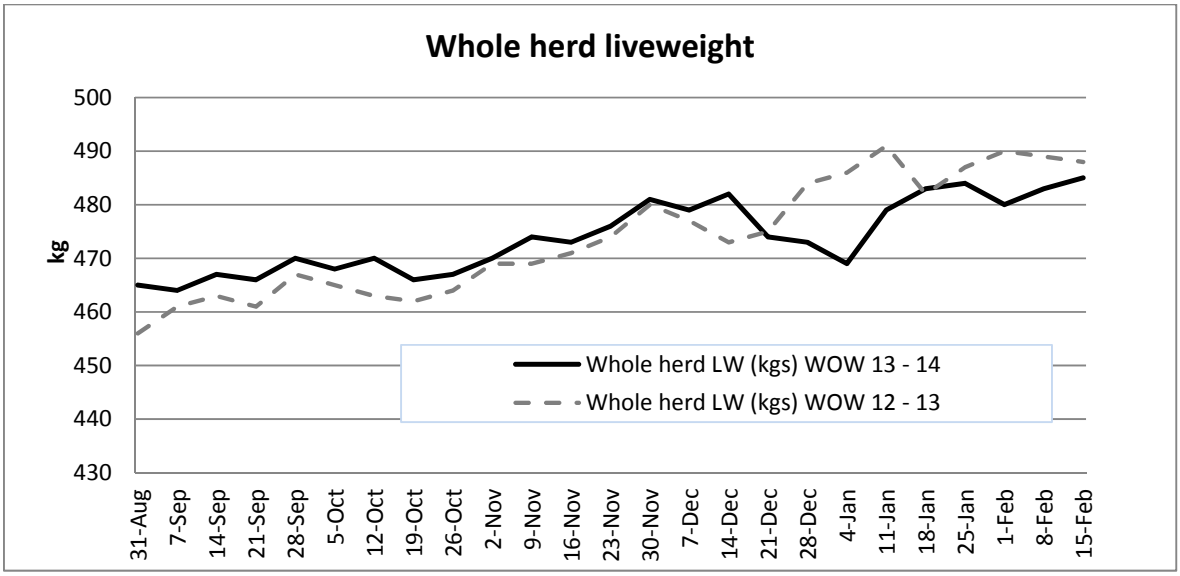


The two charts below show an estimate of how much energy the cows have consumed over the last two seasons based on back calculations from milk productions and liveweight change. Whilst the total energy consumed this season has been very similar to last season, the daily amount and duration of silage feeding has been much greater as less pasture has been available.



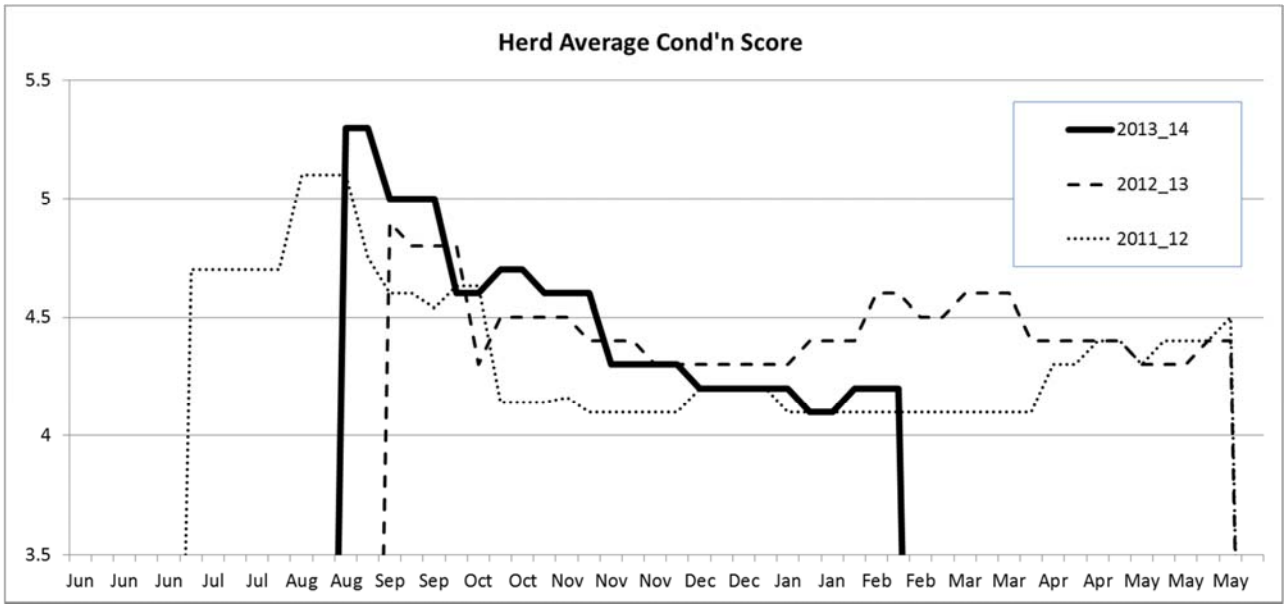


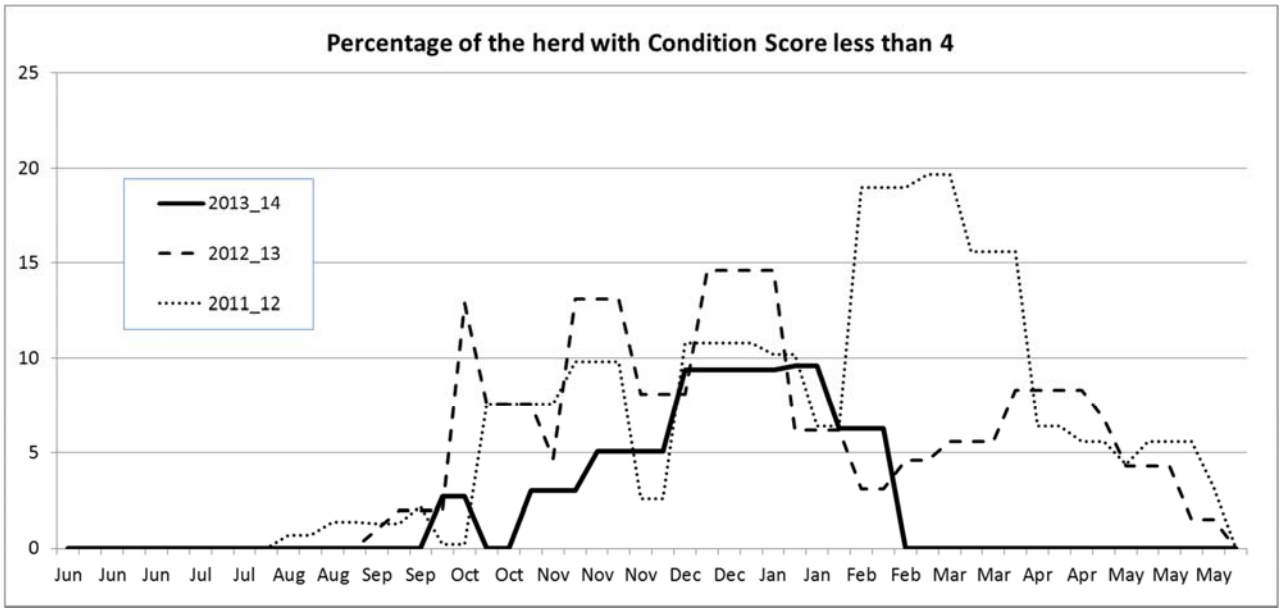
Cows liveweight [whole herd] is about the same at this point as it was last season. It can be seen that the cows took a check in December – January probably due to the combination of factors above.



Body Condition Score

The average BCS of the herd [4.1] is slightly lower than at the same time last year. There are also slightly more cows less than BCS 4.0 (7.4% vs 3.1%), so whilst things are trending in the right direction progress is a little slow. This is possibly a result of feeding a lot of silage in January.



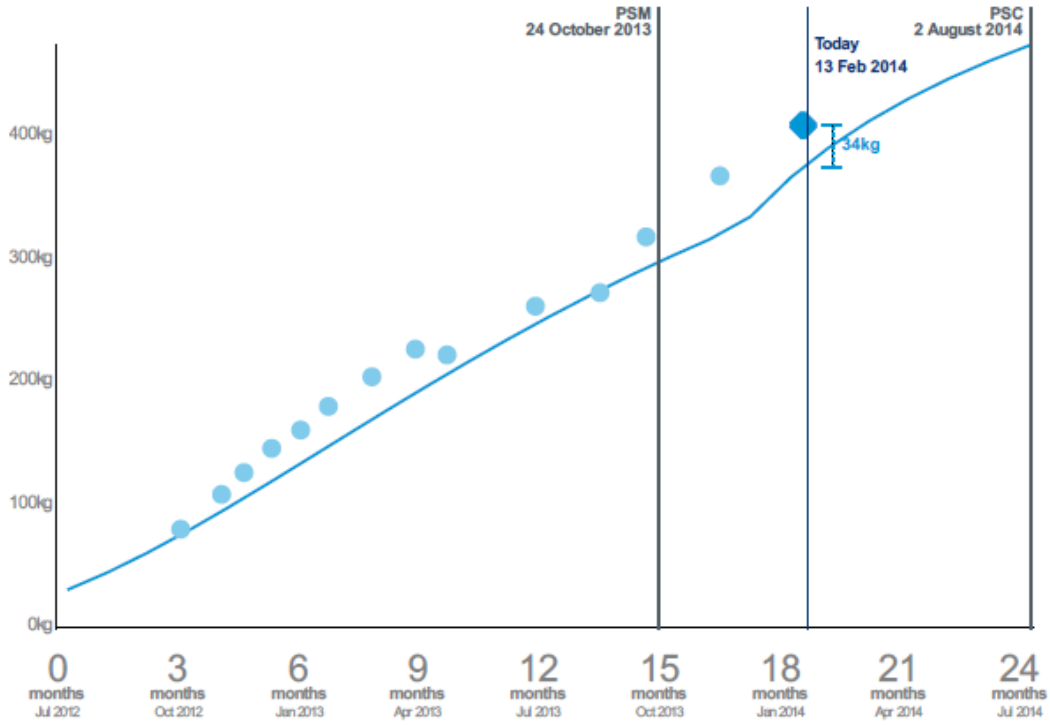

Percentage of the herd with Condition Score less than 4
25
20
15
10
5
0
2013_14
2012_13
2011_12
Jun Jun Jun Jul Jul Aug Aug Sep Sep Oct Oct Nov Nov Nov Dec Dec Jan Jan Feb Feb Mar Mar Apr Apr May May May

Heifer Liveweights

Overview of 2012 Spring as at 10/02/2014

Young stock trend

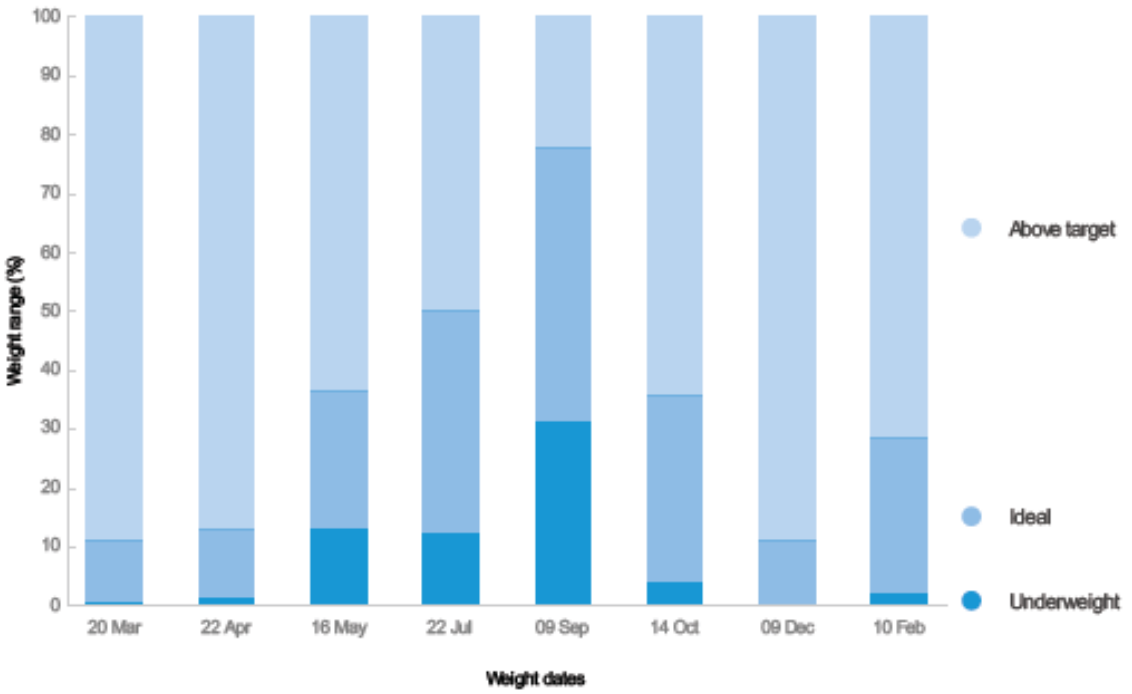
All 154 animals in this weighing are displayed



LIC

Ranges for 2012 Spring as at 10/02/2014

Weight ranges

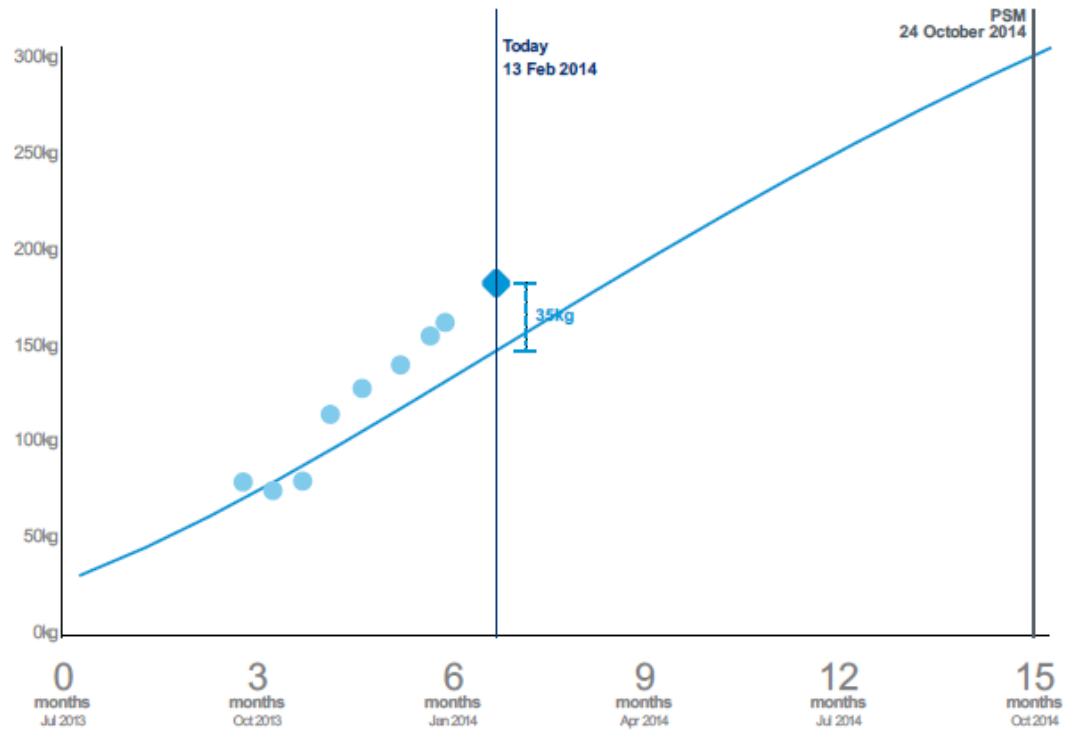


Range	March 2013		April 2013		May 2013		July 2013		September 2013		October 2013		December 2013		February 2014	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Above target	137	89	134	87	98	63.6	77	50	34	22.1	99	64.3	137	89	110	71.4
Ideal	16	10.4	18	11.7	36	23.4	58	37.7	72	46.8	49	31.8	17	11	41	26.6
Underweight	1	0.6	2	1.3	20	13	19	12.3	48	31.2	6	3.9	0	0	3	1.9
Total animals	154		154		154		154		154		154		154		154	

Overview of 2013 Spring as at 13/02/2014

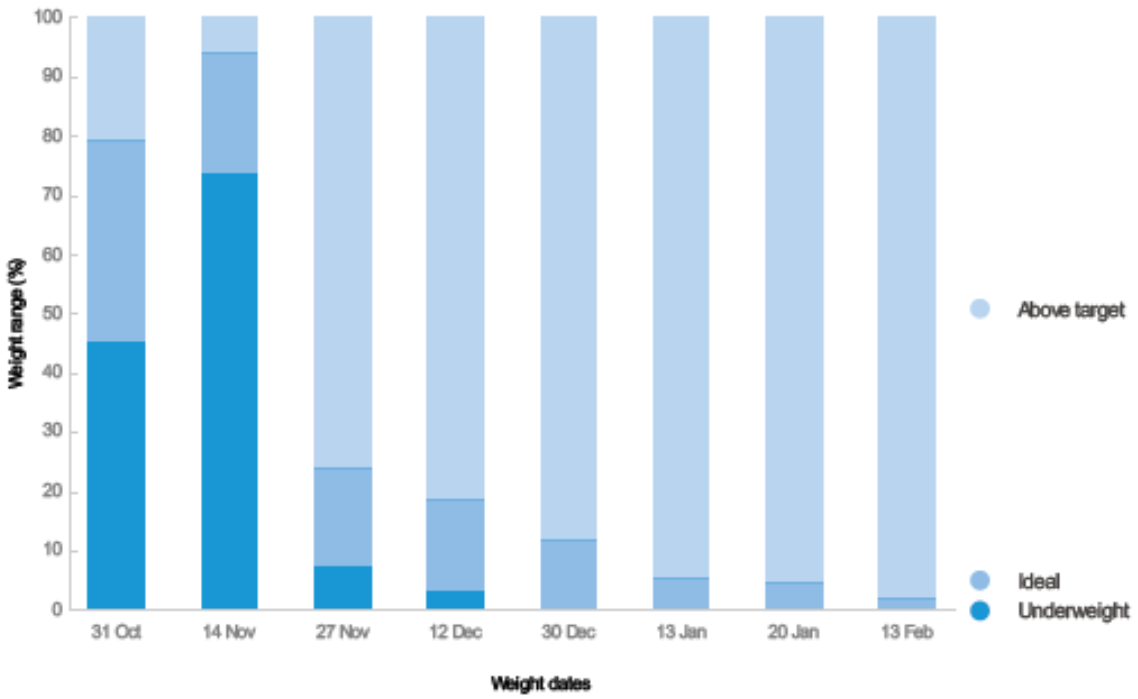
Young stock trend

All 150 animals in this weighing are displayed



Ranges for 2013 Spring as at 13/02/2014

Weight ranges



Range	October 2013		November 2013		November 2013		December 2013		December 2013		January 2014		January 2014		February 2014	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Above target	15	20.5	2	5.9	114	76	122	81.3	132	88	141	94.6	143	95.3	147	98
Ideal	25	34.2	7	20.6	25	16.7	23	15.3	18	12	8	5.4	7	4.7	3	2
Underweight	33	45.2	25	73.5	11	7.3	5	3.3	0	0	0	0	0	0	0	0
Total animals	73		34		150		150		150		149		150		150	

LUDF Farm Walk Notes

Tuesday 18th February 2014

Critical issues for the short term

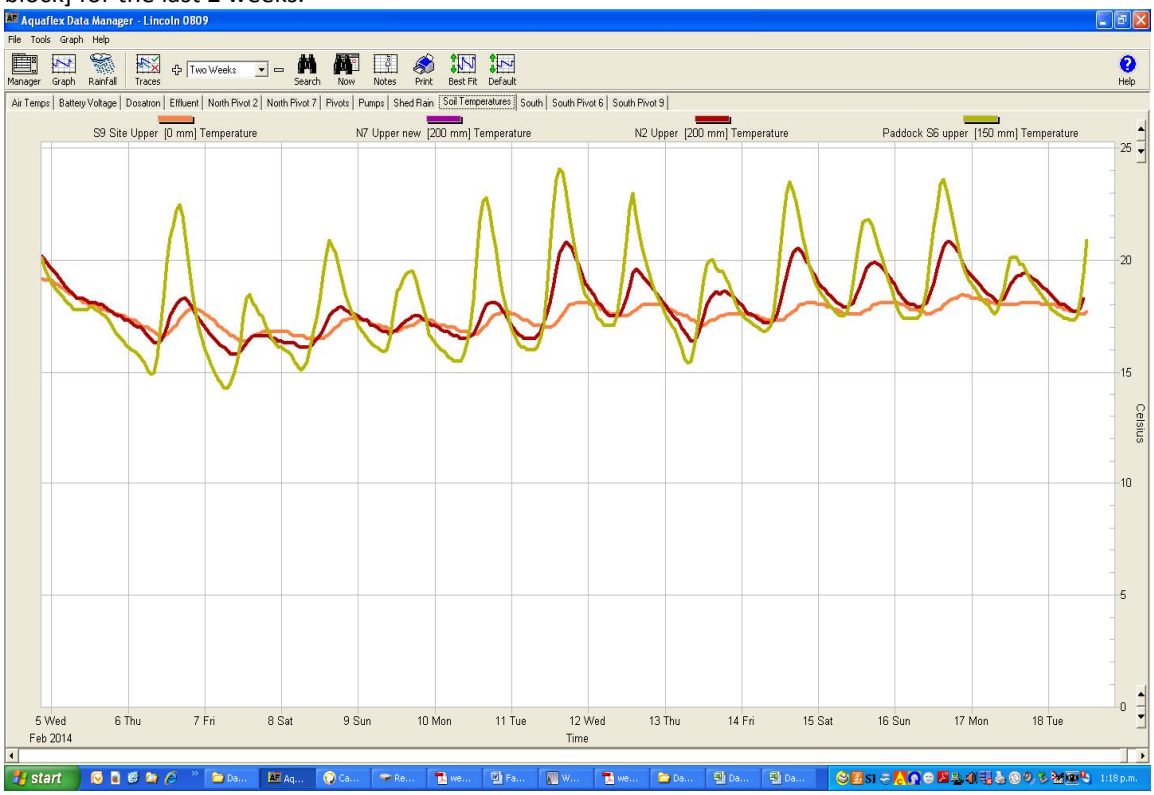
1. **Manage feed supply and pasture quality on the platform and respond quickly to changing growth rates.**
2. **Keeping all cows especially early calving light condition cows well fed to start managing cow condition to achieve required cow condition at calving.**
3. **Achieving target grazing residuals.**
4. **Get programmed pasture renewal done and all paddocks back in the grazing round.**

Herd Management

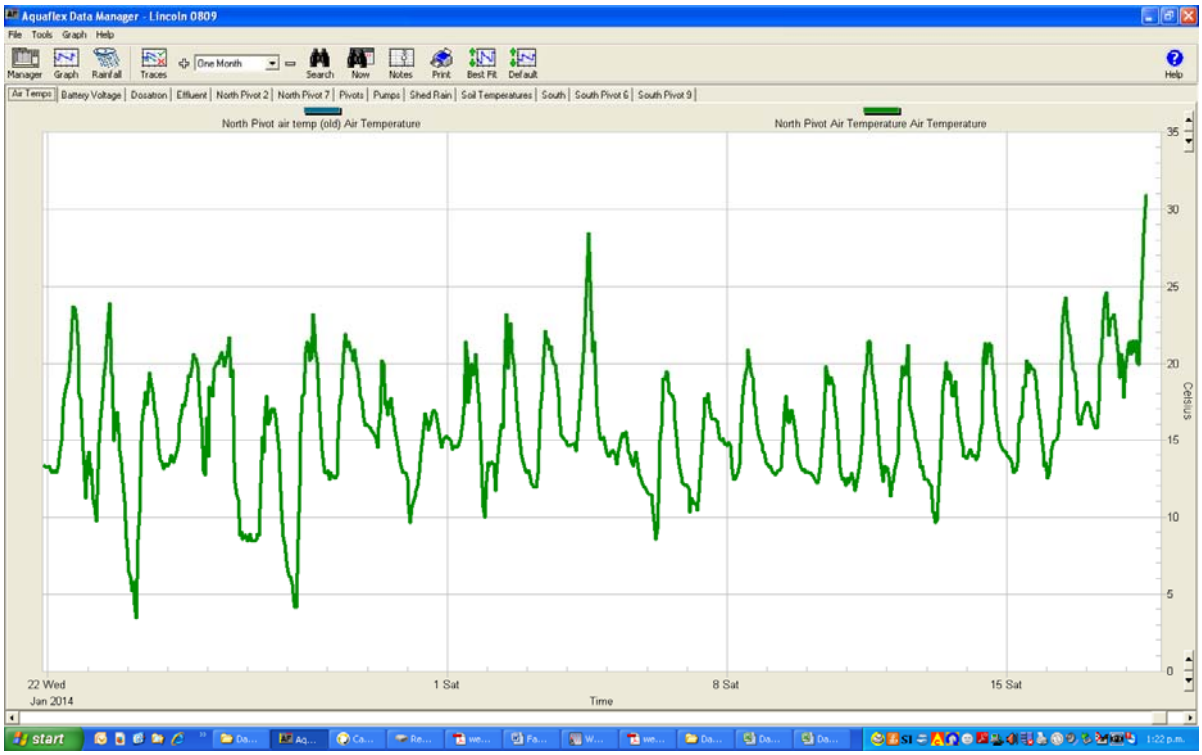
1. There are now 383 cows in the main herd and 237 in the small herd. This gives a total of 620 cows milking into the vat this morning. There are 2 treatment cows.
2. The whole herd has gained 2kg of liveweight in the past week. The monitor group of 347 early MA cows gained 2kg, and the younger cows [2011 born] have gained 4kg liveweight.
3. We have had 2 new cases of mastitis and 5 new lameness cases this week. Total lameness cases season to date are 98, at this stage last season we had had 216 cases. A good result for the team and the lane renewal work done.
4. Average bulk milk SCC was 141.
5. Average daily milk solids production per cow (all cows milked into the vat) is 1.8kgMS/cow, 0.06 kg/ cow/day more than last week. Daily production per hectare was 6.98 kg MS/ha.

Growing Conditions

6. 9 am average soil temperature was 17.5 degrees 0.8 degrees warmer than last week and more like what we would expect at this time of year. Below is a graphic of soil temperature on farm at 3 sites [North and South block] for the last 2 weeks.



Below is a graphic of the farm air temperatures for the last month, showing that over the last 2 weeks the minimum temperatures have been more consistent and warmer, which has probably supported the gradual rise in soil temperatures [above].



7. The farm had 10.6 mm rain over the week.
8. We have irrigated 1 day on the North block and 1 day on the South block in the past week. The Aquaflex soil moisture meters indicate that the soils moisture range is between 50 and 80% of field capacity.

Pasture Production and Management

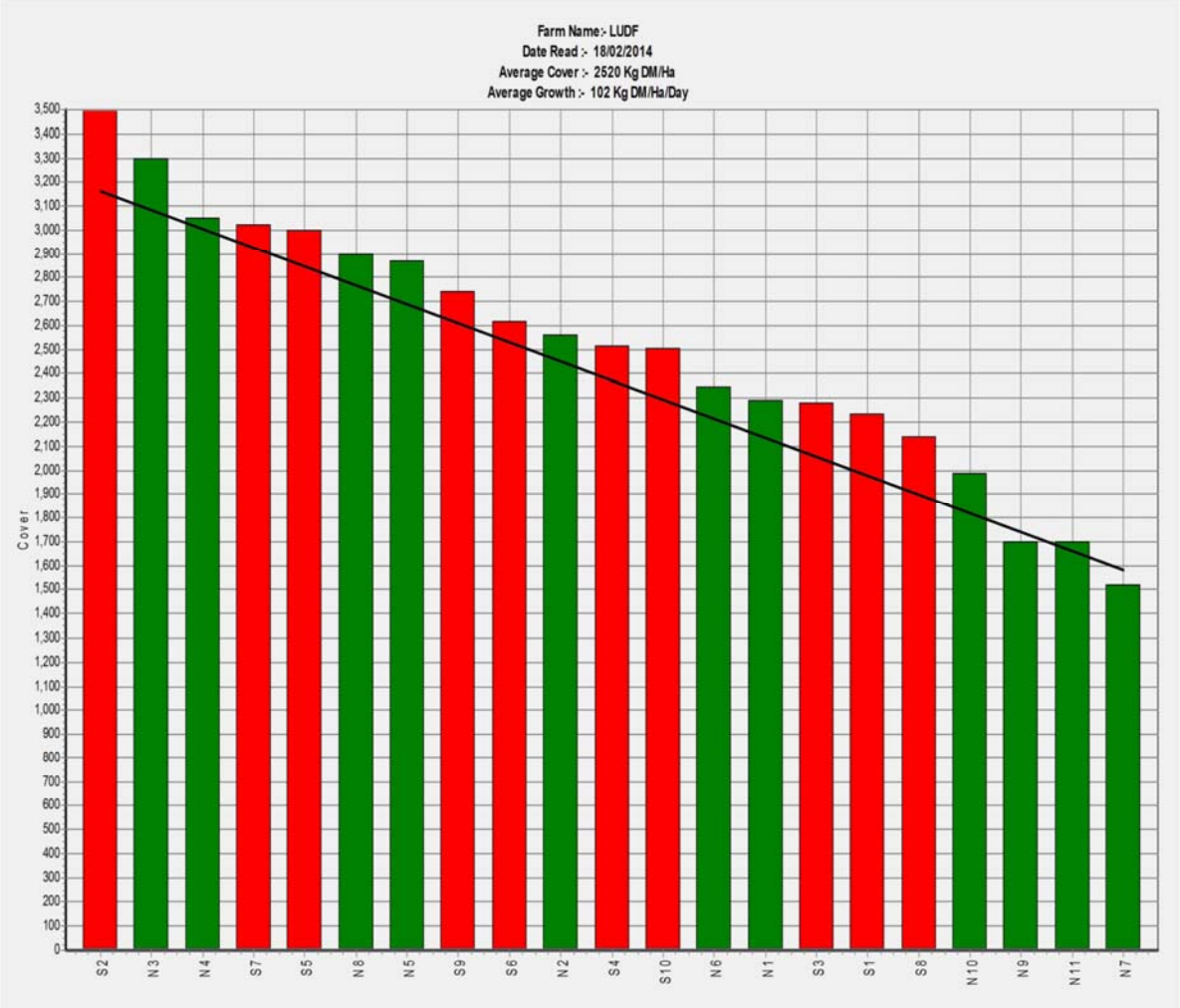
9. This weeks measured average pasture cover is 2520 kgDM/ha down 95 kg DM/ha, from last week. Our estimated average daily pasture growth rate for the last week has been 102 kg DM/ha.
10. This week we have a predicted surplus of 23 T DM. The round length has sped up by 2 days over the week to 20 days. No silage has been fed this week. We will look to hold the round in the 19 - 22 days range until the end of the week [next Tuesday].
11. We have applied nitrogen [urea] to 46.7 ha of recently grazed pastures at 25kg N/ha.
12. Our third pasture renewal paddock, N7 was sown 6 weeks ago, it is taking longer than the normal 6 weeks to get back into to full grazing due to cooler ground conditions. It will get its first nip-off tomorrow morning. This will result in regrassing approximately 15% of the farm again this year.

Feeding Management

13. We have fed no silage this week.
14. No mowing was done this week.

15. Our plan is to continue feeding cows as well as we can, particularly early calving low body condition cows, whilst concentrating on ensuring good pasture quality and production going forward. We will do this by achieving even and consistent residuals of 1550 - 1700 kg DM/ha and holding a round length long enough to get our pre graze pasture to a 2.5 leaf stage.

16. This week's wedge is printed below



Herd Management and Mating

17. Our second pregnancy test was done 8 days ago; we have a six week in-calf rate of 78% and final not-in-calf rate of 12% after 10 weeks of mating.

18. The herd was body condition scored this week, average was 4.1 and 7.4% were below BCS 4.0 these are not as good as we would like. We had expected the average BCS to have started to trend upwards. We have already put low BCS, early calving cows in the small herd to assist with their body condition and will continue to monitor cows to ensure consistency of feeding towards BCS targets later in the season.

Data sheet

LUDF Weekly report	28-Jan-14	4-Feb-14	11-Feb-14	18-Feb-14
Farm grazing ha (available to milkers)	160	160	160	160
Dry Cows on farm / East blk /Jackies/other	0/0/0	0/0/0	0/0/0	0/0/0
Culls (Includes culls put down & empties)	3	0	0	0
Culls total to date	24	24	24	24
Deaths (Includes cows put down)	0	0	0	0
Deaths total to date	4	4	4	4
Calved Cows available (Peak Number 630…)	622	622	622	622
Treatment / Sick mob total	4	2	0	2
Mastitis clinical treatment	1	2	0	2
Mastitis clinical YTD (tgt below 64 yr end)	56	58	58	60
Bulk milk SCC (tgt Avg below 150)	152	157	139	141
Lame new cases	3	5	1	5
Lame ytd	87	92	93	98
Lame days YTD (Tgt below 1000 yr end)	517	531	531	552
Other/Colostrum	0/0	0/0	0/0	0/0
Milking twice a day into vat	618	620	622	620
Milking once a day into vat	0	0	0	0
Small herd	237	237	237	237
Main Herd	381	383	385	383
MS/cow/day (Actual kg / Cows into vat only)	1.83	1.81	1.76	1.80
MS/cow to date (total kgs / Peak Cows 632	306	318	331	343
MS/ha/day (total kgs / ha used	7.06	7.01	6.83	6.98
Herd Average Cond'n Score	4.20	0.00	0.00	4.10
Monitor group LW kg WOW 347 early MA calvers	474	476	479	481
Soil Temp Avg Aquaflex	15.4	16.4	16.7	17.5
Growth Rate (kgDM/ha/day)	78	90	83	102
Plate meter height - ave half-cms	13.2	14.4	15.0	14.4
Ave Pasture Cover (x140 + 500)	2353	2512	2597	2520
Surplus/[defict] on feed wedge- tonnes	[2.5]	19	35	23
Pre Grazing cover (ave for week)	2627	3131	3064	3474
Post Grazing cover (ave for week)	1550	1650	1650	1700
Highest pregrazing cover	2780	3344	3466	3650
Area grazed / day (ave for week)	7.00	6.24	6.85	7.67
Grazing Interval	22	24	22	20
Milkers Offered/grazed kg DM pasture	8.1	13.2	14.70	18.8
Estimated intake pasture MJME	99	161	179.3	229
Milkers offered kg DM Grass silage	8	5	4.20	0
Silage MJME/cow offered	11	11	11.4	11
Estimated intake Silage MJME	92	55	47.9	0
Estimated total intake MJME	191	216	227	229
Target total MJME Offered/eaten (includes 6% waste)	0	0	0	0
Pasture ME (pre grazing sample)	12.1	12.0	11.4	11.8
Pasture % Protein	25.5	21.8	20.7	19.3
Pasture % DM - Concern below 16%	15.9	15.6	15.6	14.7
Pasture % NDF Concern < 33	36.0	36.4	47.4	41.7
Mowed pre or post grazing YTD	8.3	0.0	0.0	0.0
Total area mowed YTD	367.7	367.7	367.7	367.7

Supplements fed to date kg per cow (630 peak)	444.5	477.7	506.8	506.8
Supplements Made Kg DM / ha cumulative	0	0	0	0
Units N applied/ha and % of farm	25units/24%	25units/22%	25units/25%	25units/29%
Kgs N to Date (whole farm)	181	186	193	201
Rainfall (mm)	10.4	0	6.2	10.6
Aquaflex topsoil relative to fill point target 60 - 80%	50-100	50-90	70-90	50-80

Farm walks occur every Tuesday morning. Farmers or their managers and staff are always welcome to walk with us. Please call to notify us of your intention and bring your plate meter and gumboots. Phone SIDDC – 03 423 0022.

Management Group

Peter Hancox (Farm Manager), Steve Lee (DairyNZ).

Reproductive Performance

Fertility Focus 2012: Seasonal

Lincoln University
The Manager (University Dairy
PO Box 94
Lincoln University
Lincoln 7647

Report Date:	25/03/13
PTPT:	BQCY
Herd Code:	6/114
No of cows included:	636
These Cows calved between:	17/06/12 and 23/12/12
Mating start & stop date: (estimated from AI or rectal pregnancy test data)	25/10/12 - 03/01/13
Planned start of calving:	03/08/13

1 Overall herd reproductive performance

6-week in-calf rate
Percentage of cows pregnant in the first 6 weeks of mating

Your herd	72% (72-73%)
Aim above	78%

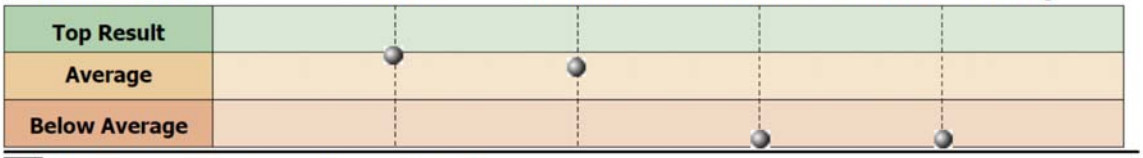
☆☆☆

Empty rate
Percentage of cows not pregnant after 11 weeks of mating

Your herd	13% (13-14%)
Aim above	6%

☆

% of herd in calf — 3 weeks — 6 weeks — 9 weeks — 12 weeks of mating



2 Drivers of the 6-week in-calf rate

3-week submission rate
% of cows that were inseminated in the first 3 weeks of mating

Your herd	90%
Aim above	90%

☆☆☆☆☆

Non-return rate
% of inseminations that were not followed by a return to heat

Your herd	
Aim above	

Conception rate
% of inseminations that resulted in a confirmed pregnancy

Your herd	54%
Aim above	60%

☆☆☆

3 Key indicators to areas for improvement

Calving pattern of first calvers
Well managed heifers get in calf quickly and calve early.

Calved by	Week 3	Week 6
Your herd	92%	99%
Aim above	75%	92%
	☆☆☆☆☆	☆☆☆☆☆

Calving pattern of whole herd
Did late calvers reduce in-calf rates?

Calved by	Week 3	Week 6	Week 9
Your herd	70%	87%	98%
Aim above	60%	87%	98%
	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆

Pre-mating heats
A high % of well managed cows will cycle before the start of mating.

Your herd	79%
Aim above	85%

☆☆☆☆☆

3-week submission rate of first
Well managed heifers cycle early.

Your herd	92%
Aim above	90%

☆☆☆☆☆

Heat detection
A high % of early-calved mature cows should be inseminated in the first 3 weeks of mating.

Your herd	96%
Aim above	95%

☆☆☆☆☆

Non-cycling cows
Treated non-cyclers get in calf earlier.

Treated	By PSM	Wks 1-3	Wks 4-6
Your herd	0%	0%	0%

Rating	What does it tell me?	What should I do?
☆☆☆☆☆	Top Result	Ideal - keep up the good work!
☆☆☆	Average	Getting there - focus on getting the details right.
☆	Below Average	Plenty of room to improve - seek professional advice.
	No Result	Not enough information provided - seek help with records.

Perfomance after week 6
If you ran bulls after week 6 of mating, empty rate helps assess bull performance.

Empty Rate	
Your herd	13%
Expected	8%

Seek advice

Behind Your Detailed Fertility Focus Report

Report period: Cows calved between 17/06/12 and 23/12/12.
This was the most recent period with sufficient herd records that enabled an analysis to be completed.

Calving system: Seasonal
Your herd has been classified as seasonally calving because most calvings occurred in a single batch lasting less than 21 weeks.

Level of analysis: Detailed.
Your good record keeping means a detailed analysis was possible for your herd.

Report Date:	25/03/2013
PTPT:	BQCY
Herd Code:	6/114
Calvings up to this date requested for analysis:	31/03/13
No of cows included:	636
These Cows calved between:	17/06/12 and 23/12/12
Mating start & stop date:	25/10/12 - 03/01/13

(estimated from AI or rectal pregnancy test data)

Part A) Herd records cross check

Check that the herd records in the table are complete and correct.

2012/13	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total
No. of calvings		83	433	129	19								664
No. of AI matings					200	600	45						845
No. of aged preg tests								469	161				630
No. of non-aged preg tests													0
No. of cows culled or died		1	12	17	3	4	2						39

Part B) Notes on the calculations

Use the following notes to see how your results were calculated.

1 Overall herd reproductive performance

6-week in-calf rate

Your report has been based on the mating and pregnancy test results you supplied. The ACTUAL 6 week in-calf rate is shown for your herd.

Empty rate

The empty rate reported was based on the results of pregnancy testing. The range provides the lowest and highest likely estimate.

2 Drivers of the 6-week in-calf rate

3-week submission rate

631 cows had calving dates in the required range and 90% of these were submitted during the first 21 days of mating.

Non-return rate (1-24 days)

Non-return rate is not calculated when pregnancy test results provide an accurate estimate of conception rate.

Conception rate

841 eligible inseminations were used in calculating your herd's conception rate.

3 Key indicators to areas for improvement

Calving pattern of first calvers

142 cows with eligible calving dates were recorded as calving at less than 34 months of age. The calving pattern of first calvers was calculated from their records.

Calving pattern of whole herd

664 cows had calving dates that were eligible for this report.

Pre-mating heats

631 cows had calving dates in the required range and 498 of these had a pre-mating heat recorded.

3-week submission rate of first

136 first calvers had calving dates in the required range and 92% of these were submitted during the first 21 days of mating.

Heat detection

273 cows at least 4 years old at calving had calved at least 8 weeks before planned start of mating and 96% of these were submitted during the first 21 days of mating.

Non-cycling cows

No cows were identified as being treated for non-cycling. If you did treat non-cycling cows, please supply records to ensure those cows are identified.

Performance after week 6

Your herd's empty rate and 6-week in-calf rate were used to determine the success of your herd's mating program after the first six weeks. If bulls were used after week 6 of mating, this gives an assessment of how well they got cows in calf.

Induced cows

No cows were identified as having induced calvings. If you did induce cows, please ensure that they are all identified.

Fertility Focus 2013: Seasonal

Lincoln University
The Manager (University Dairy
PO Box 94
Lincoln University
Lincoln 7647

Report Date:	14/02/14
PTPT:	BQCY
Herd Code:	6/114
No of cows included:	627
These Cows calved between:	17/06/13 and 23/12/13
Mating start & stop date: (estimated from AI or rectal pregnancy test data)	25/10/13 - 06/01/14
Planned start of calving:	03/08/14

1 Overall herd reproductive performance

6-week in-calf rate
Percentage of cows pregnant in the first 6 weeks of mating

Your herd	78% (77-78%)
Aim above	78%

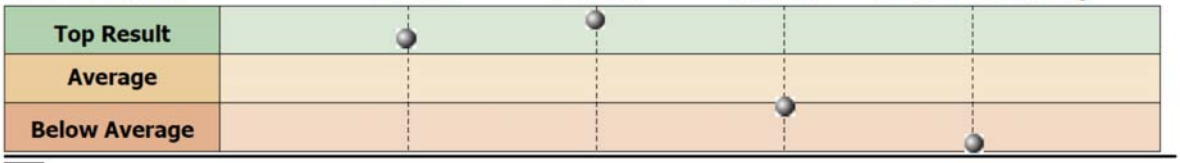
☆☆☆☆☆

Empty rate
Percentage of cows not pregnant after 11 weeks of mating

Your herd	12% (11-12%)
Aim above	6%

☆

% of herd in calf — 3 weeks — 6 weeks — 9 weeks — 12 weeks of mating



2 Drivers of the 6-week in-calf rate

3-week submission rate
% of cows that were inseminated in the first 3 weeks of mating

Your herd	88%
Aim above	90%

☆☆☆☆☆

Non-return rate
% of inseminations that were not followed by a return to heat

Your herd	
Aim above	

Conception rate
% of inseminations that resulted in a confirmed pregnancy

Your herd	61%
Aim above	60%

☆☆☆☆☆

3 Key indicators to areas for improvement

Calving pattern of first calvers
Well managed heifers get in calf quickly and calve early.

Calved by	Week 3	Week 6
Your herd	87%	97%
Aim above	75%	92%
	☆☆☆☆☆	☆☆☆☆☆

Calving pattern of whole herd
Did late calvers reduce in-calf rates?

Calved by	Week 3	Week 6	Week 9
Your herd	62%	86%	97%
Aim above	60%	87%	98%
	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆☆

Pre-mating heats
A high % of well managed cows will cycle before the start of mating.

Your herd	80%
Aim above	85%

☆☆☆☆☆

3-week submission rate of first
Well managed heifers cycle early.

Your herd	89%
Aim above	90%

☆☆☆☆☆

Heat detection
A high % of early-calved mature cows should be inseminated in the first 3 weeks of mating.

Your herd	95%
Aim above	95%

☆☆☆☆☆

Non-cycling cows
Treated non-cyclers get in calf earlier.

Treated	By PSM	Wks 1-3	Wks 4-6
Your herd	0%	0%	0%

Rating	What does it tell me?	What should I do?
☆☆☆☆☆	Top Result	Ideal - keep up the good work!
☆☆☆	Average	Getting there - focus on getting the details right.
☆	Below Average	Plenty of room to improve - seek professional advice.
	No Result	Not enough information provided - seek help with records.

Perfomance after week 6
If you ran bulls after week 6 of mating, empty rate helps assess bull performance.

	Empty Rate
Your herd	12%
Expected	5%

Seek advice

Behind Your Detailed Fertility Focus Report

Report period: Cows calved between 17/06/13 and 23/12/13.
This was the most recent period with sufficient herd records that enabled an analysis to be completed.

Calving system: Seasonal
Your herd has been classified as seasonally calving because most calvings occurred in a single batch lasting less than 21 weeks.

Level of analysis: Detailed.
Your good record keeping means a detailed analysis was possible for your herd.

Report Date:	14/02/2014
PTPT:	BQCY
Herd Code:	6/114
Calvings up to this date requested for analysis:	14/02/14
No of cows included:	627
These Cows calved between:	17/06/13 and 23/12/13
Mating start & stop date:	25/10/13 - 06/01/14

Part A) Herd records cross check

(estimated from AI or rectal pregnancy test data)

Check that the herd records in the table are complete and correct.

2013/14	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total
No. of calvings		70	416	136	23								645
No. of AI matings					180	567	51						798
No. of aged preg tests								483	140				623
No. of non-aged preg tests							128						128
No. of cows culled or died	1	1	8	10	11		1	1	3				36

Part B) Notes on the calculations

Use the following notes to see how your results were calculated.

1 Overall herd reproductive performance

6-week in-calf rate

Your report has been based on the mating and pregnancy test results you supplied. The ACTUAL 6 week in-calf rate is shown for your herd.

Empty rate

The empty rate reported was based on the results of pregnancy testing. The range provides the lowest and highest likely estimate.

2 Drivers of the 6-week in-calf rate

3-week submission rate

627 cows had calving dates in the required range and 88% of these were submitted during the first 21 days of mating.

Non-return rate (1-24 days)

Non-return rate is not calculated when pregnancy test results provide an accurate estimate of conception rate.

Conception rate

790 eligible inseminations were used in calculating your herd's conception rate.

3 Key indicators to areas for improvement

Calving pattern of first calvers

119 cows with eligible calving dates were recorded as calving at less than 34 months of age. The calving pattern of first calvers was calculated from their records.

Calving pattern of whole herd

645 cows had calving dates that were eligible for this report.

Pre-mating heats

627 cows had calving dates in the required range and 502 of these had a pre-mating heat recorded.

3-week submission rate of first

116 first calvers had calving dates in the required range and 89% of these were submitted during the first 21 days of mating.

Heat detection

261 cows at least 4 years old at calving had calved at least 8 weeks before planned start of mating and 95% of these were submitted during the first 21 days of mating.

Non-cycling cows

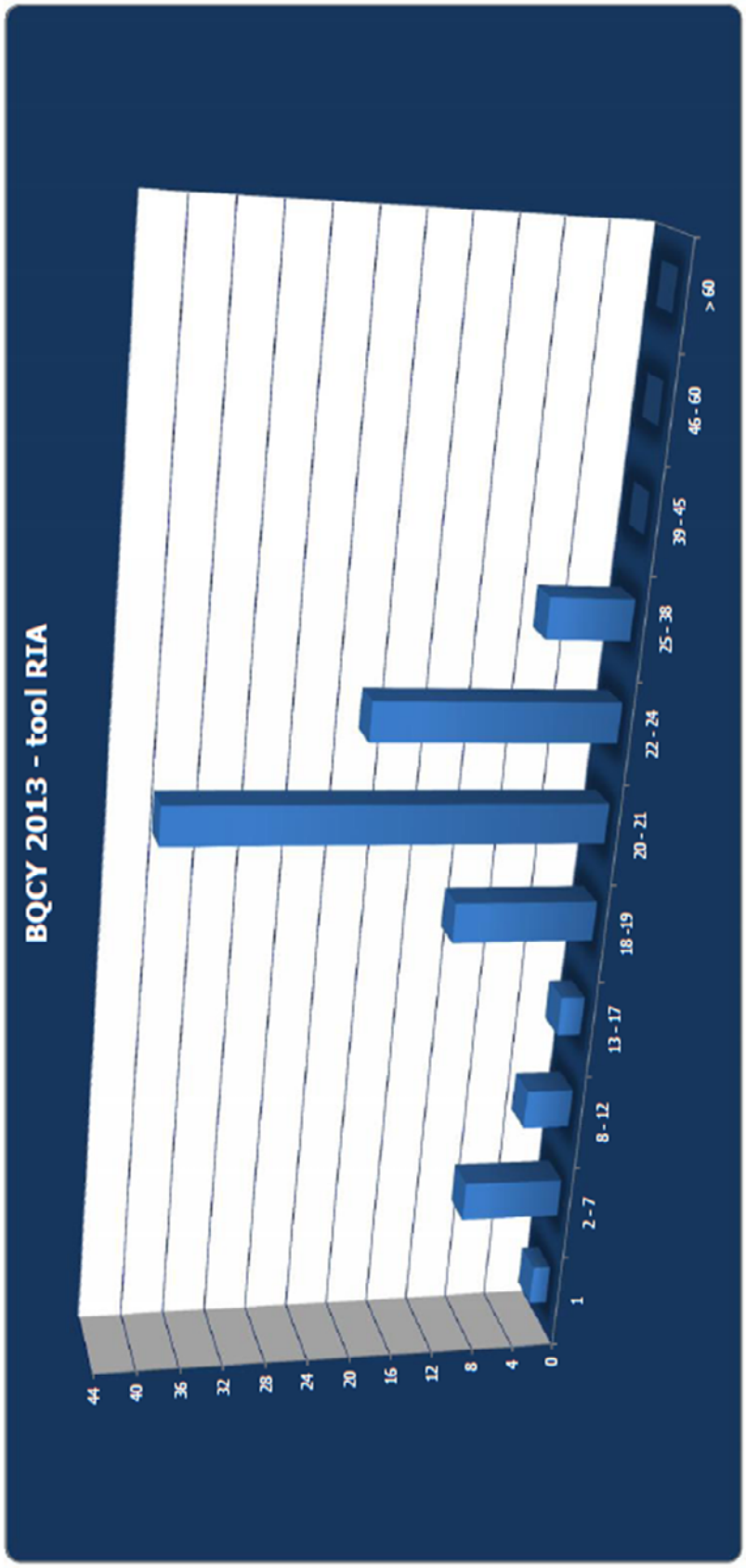
No cows were identified as being treated for non-cycling. If you did treat non-cycling cows, please supply records to ensure those cows are identified.

Performance after week 6

Your herd's empty rate and 6-week in-calf rate were used to determine the success of your herd's mating program after the first six weeks. If bulls were used after week 6 of mating, this gives an assessment of how well they got cows in calf.

Induced cows

No cows were identified as having induced calvings. If you did induce cows, please ensure that they are all identified.


BQCY 2013 - tool RIA
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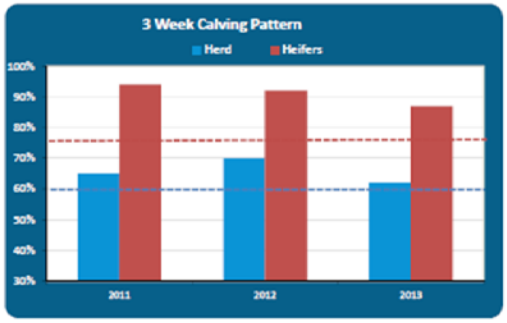
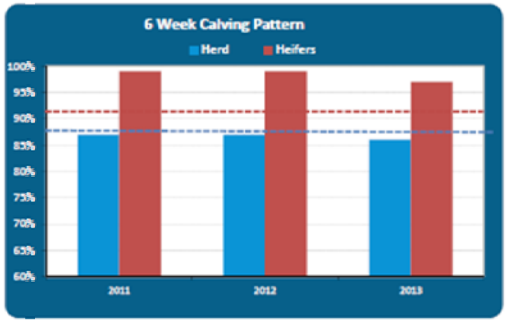
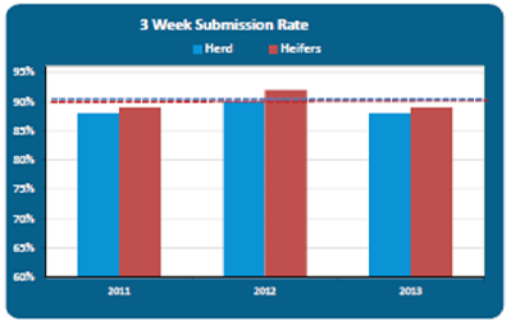
25-38
39-45
46-60
> 60

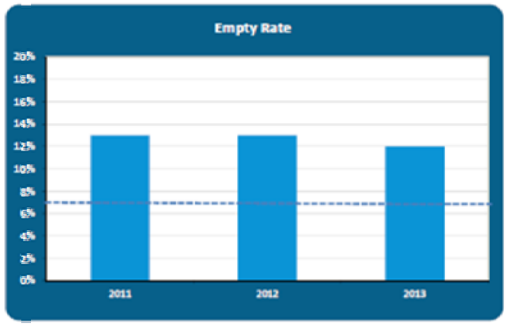
Reproduction Analysis for LUDF

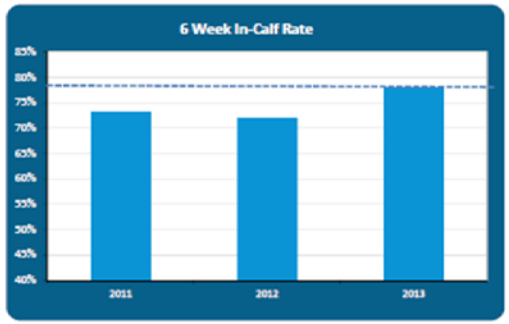
TARGETS			78%	90%	90%	6%	95%	75%	92%	60%	87%	98%
		Cows	6 wk In Calf Rate	3wk Submission Rate	3wk Submission Rate (Heifers)	Empty Rate	Heat Detection	3 wk Calving Pattern (Heifers)	6 wk Calving Pattern (Heifers)	3 wk Calving Pattern	6 wk Calving Pattern	9 wk Calving Pattern
LUDF	2011	629	73%	88%	89%	13%	91%	94%	99%	65%	87%	98%
	2012	636	72%	90%	92%	13%	96%	92%	99%	70%	87%	98%
	2013	627	78%	88%	89%	12%	95%	87%	97%	62%	86%	97%

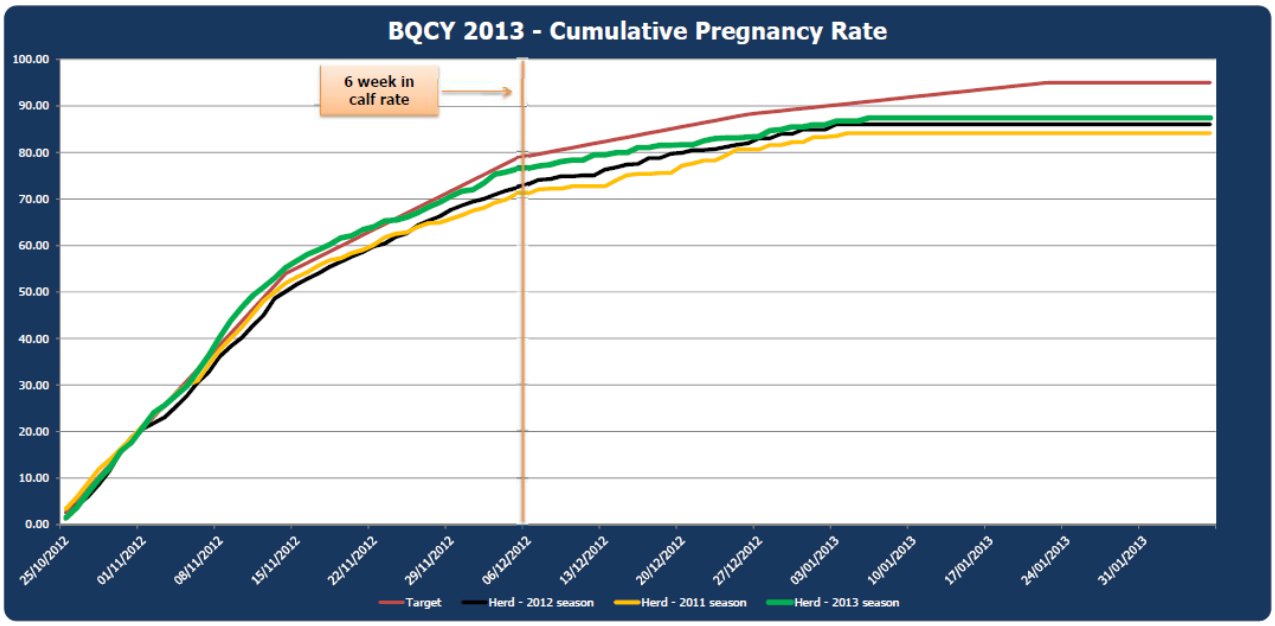


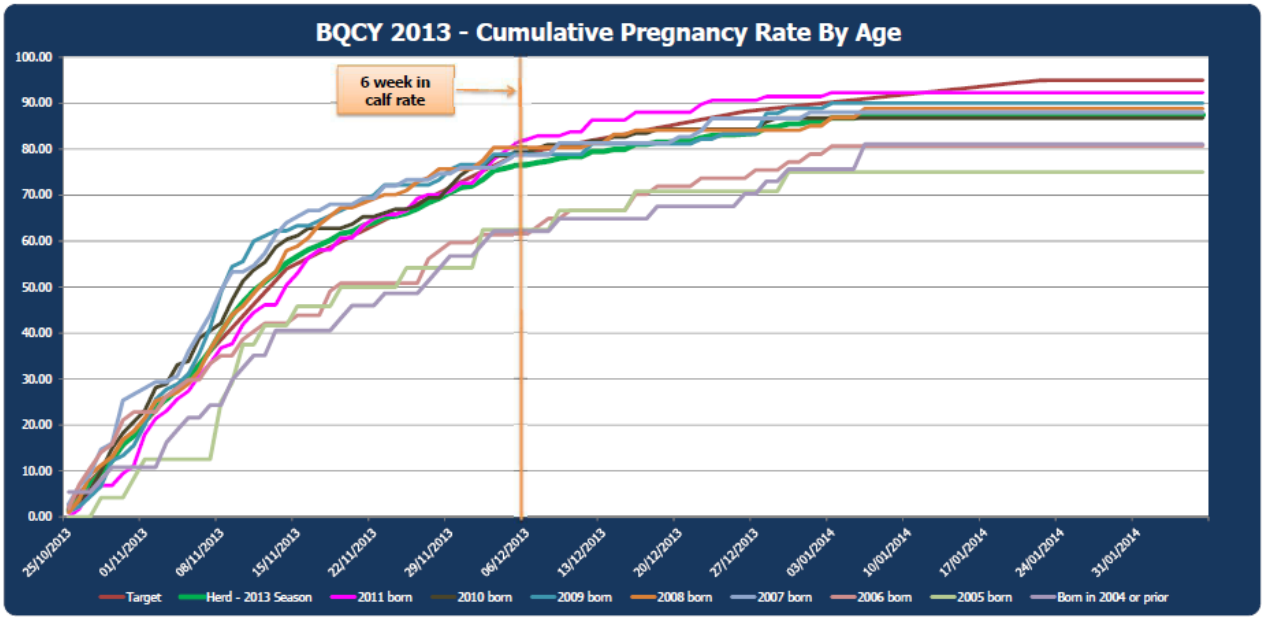










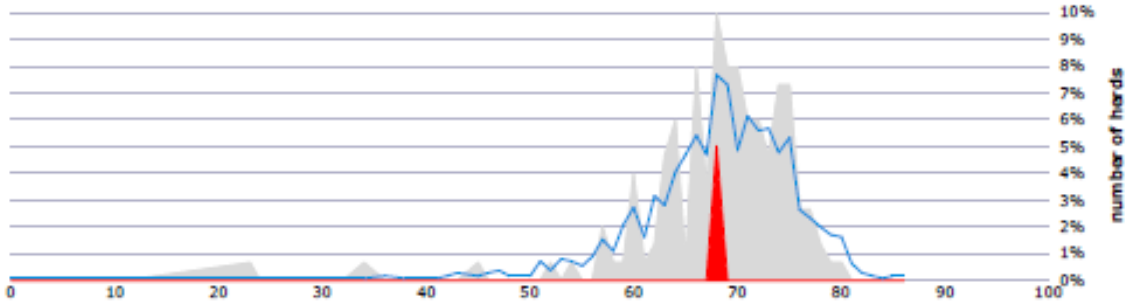


03.12 National Reproductive Benchmark

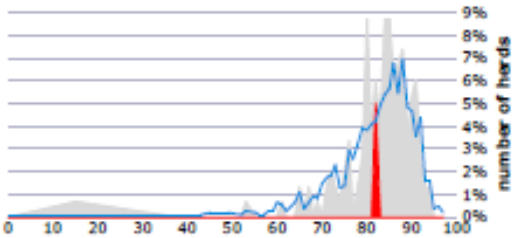
Season	2013 / 2014
FFR Analysis	Detailed
Region	CANTERBURY
No of Herds in Region = 151	

	Region	Top 25%	National
6 week Incalf rate	68	73	68
3 wk submission rate	83	88	82
Heifer 3 wk submission rate	84	91	83
Non-Return Rate	60	66	61
Conception Rate	61	67	58

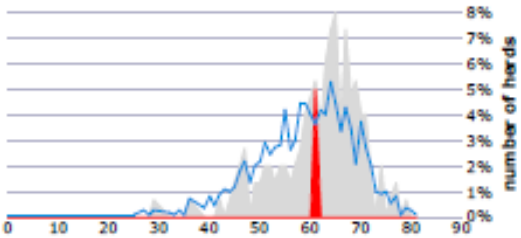
6 week in-calf rate



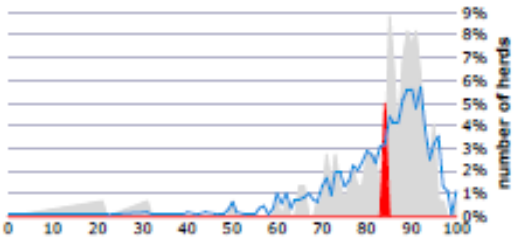
3wk Submission rate



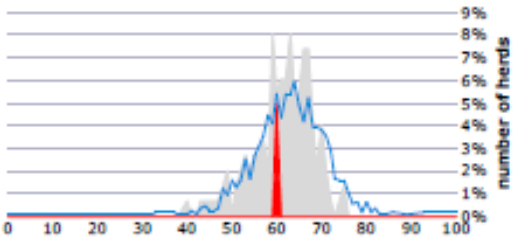
Conception Rate



Heifer 3wk Submission rate



Non-Return Rate



Legend
- National
- Canterbury Detailed rate
- Regional Average

Last Refreshed: 17/02/2014

Land and Water Regional Plan

Condensed Summary of Land and Water Regional Plan - Region-wide Rules

Note: This summary is condensed for the purposes of the time available at the LUDF focus day (20th February 2014) and should be used only as a general indication of the content of the LWRP.

General Rules

5.1 Any activity must comply with all applicable rules in Section 5 of this Plan, except: (a) where Rule 5.5 applies; or (b) where explicitly stated to the contrary in any other applicable rule in this Plan.	
5.2 Any rule on the same subject matter in the relevant sub-regional zones in Sections 6 to 15 of this Plan prevails over the relevant rule of Section 5, except: (a) where Rule 5.5 applies; or (b) where explicitly stated to the contrary in any other applicable rule in this Plan.	
5.3 Notes and cross-references are included for information purposes only and do not form part of the rules nor should they be considered a complete list.	
5.4 In consideration of applications for controlled activities or restricted discretionary activities the matters on which: (a) control is reserved; or (b) exercise of discretion is restricted; —include the lapsing period, the term of the resource consent, the review of the conditions of a resource consent, the need for a bond and the collection, recording, monitoring and provision of information concerning the exercise of a resource consent.	
5.5 Any recovery activity that would otherwise contravene sections 9(2), 13(1), 14(2), s14(3) or s15(1) of the RMA and is not listed as a permitted activity in this Plan is a restricted discretionary activity. The exercise of discretion is restricted to the following matters: 1. The timing, term and scale of the activity; and 2. The adequacy of the management plan prepared in respect of the activity, and in particular, the identification of the effects and the proposed mitigation.	
5.6 Any activity that— (a) would contravene sections 13(1), 14(2), s14(3) or s15(1) of the RMA; and (b) is not a recovery activity; and (c) is not classified by this Plan as any other of the classes of activity listed in section 87A of the RMA . — is a discretionary activity. Note: In addition to the provisions of this Plan any activity may require authority under the relevant district plan or other legislation.	

On-site Wastewater

5.7 The discharge of wastewater from an existing on-site domestic wastewater treatment system onto or into land in circumstances where a contaminant may enter water is a **permitted activity**, provided the following conditions are met…	
5.8 The discharge of wastewater from a new, modified or upgraded on-site domestic wastewater treatment system onto or into land in circumstances where a contaminant may enter water is a **permitted activity**, provided the following conditions are met…	
(b) a new, modified or upgraded on-site domestic wastewater treatment system onto or into land in circumstances where a contaminant may enter water that does not meet one or more of the conditions of Rule 5.8 is a **restricted discretionary activity**. The exercise of discretion is restricted to…	

Swimming Pool or Spa Water

See 5.10 – 5.11

Greywater

5.12 The discharge of greywater onto or into land in circumstances where a contaminant may enter water is a **permitted activity**, provided the following conditions are met…	
5.13 The discharge of greywater onto or into land in circumstances where a contaminant may enter water that does not meet one or more of the conditions of Rule 5.12 is a **restricted discretionary activity**. The exercise of discretion is restricted to the following matters…	

Pit and Composting Toilets

See 5.14-5.17

Dust Suppressants

5.18 The discharge of a dust suppressant onto or into land in circumstances where a contaminant may enter water is a **permitted activity** provided either of the following conditions is met…	
5.19 The discharge of oil as a dust suppressant onto or into land in circumstances where a contaminant may enter water that does not meet one or more of the conditions in Rule 5.18 is a **restricted discretionary activity**. The exercise of discretion is restricted to the following matter…	

Pest Control and Agrichemicals

5.20 The discharge of a vertebrate toxic agent onto or into land, including the bed of a lake or river, in circumstances where a contaminant may enter water, or into water, is a **permitted activity** provided the following conditions are met…	
5.21 The discharge of a vertebrate toxic agent onto or into land, including the bed of a lake or river, in circumstances where a contaminant may enter water, or into water, that does not meet one or more of the conditions in Rule 5.20 is a **discretionary activity**.	
5.22 The discharge of an agrichemical, or agrichemical equipment or container washwater, into or onto land, including the bed of a lake, river or artificial watercourse, in circumstances where a contaminant or water may enter water, or into a surface waterbody, is a **permitted activity** provided the following conditions are met: 1. The substance is approved for use under the Hazardous Substances and New Organisms Act 1996 and the use and discharge of the substance is in accordance with all conditions of the approval; and 2. No mixing or diluting of an agrichemical or rinsing or cleaning of containers or equipment takes place within: (a) 5 m of a surface water body, or a bore; or (b) in the bed of a river or lake, or within the Christchurch Groundwater Protection Zone as shown on the Planning Maps, or a Group or Community Drinking-water Protection Zone as set out in Schedule 1, unless: (i) the mixing or dilution takes place within a sealed, bunded system that will contain a volume of at least 110% of the largest spray tank to be filled; or (ii) the mixing or dilution is for a hand-held application technique or method; and	

3. If the water used for mixing or dilution is being abstracted from a surface water body or groundwater, a backflow prevention system is in place to prevent the agrichemical from flowing back into the source water; and 4. For discharges direct to surface water, the discharge is not: (a) within a Group or Community Drinking-water Protection Zone as set out in Schedule 1; or (b) into a river or artificial watercourse within 250 m upstream or 100 m downstream, or in a lake within 250 m, of any other surface water intake. Note: See also the rules on vegetation clearance – 5.163 – 5.174	
5.23 The discharge of an agrichemical, or agrichemical equipment or container washwater, into or onto land, including the bed of a lake, river or artificial watercourse, in circumstances where a contaminant or water may enter water, or into a surface waterbody, that does not meet one or more of the conditions of Rule 5.22 is a **discretionary activity**. Note: See also the rules on vegetation clearance – 5.163 – 5.174	

Offal and Farm Rubbish Pits

5.24 The use of land for an offal pit and the associated discharges onto or into land in circumstances where a contaminant may enter water are **permitted activities** provided the following conditions are met…	
5.25 Despite Rule 5.24, the use of land to bury a single dead animal and the associated discharge onto or into land in circumstances where a contaminant may enter water are **permitted activities** provided the following conditions are met…	
5.26 The use of land for an offal pit and the associated discharges onto or into land in circumstances where a contaminant may enter water that does not meet one or more of the conditions in Rule 5.24 is a **restricted discretionary activity** where the following condition is met…	
5.27 The use of land for an on-site refuse disposal pit and the associated discharges onto or into land in circumstances where a contaminant may enter water are **permitted activities** provided the following conditions are met…	
5.28 The use of land for an on-site refuse disposal pit and the associated discharges onto or into land in circumstances where a contaminant may enter water that does not meet one or more of the conditions in Rule 5.27 is a **restricted discretionary activity** where the following condition is met…	

Animal and Vegetative Waste

5.29 The discharge of solid animal waste (excluding any discharge directly from an animal to land), or vegetative material containing animal excrement or vegetative material, including from an intensive farming process or industrial or trade process, into or onto land, or into or onto land in circumstances where a contaminant may enter water is a **permitted activity** provided the following conditions are met…	
5.30 The discharge of solid animal waste, (excluding any discharge directly from an animal to land), or vegetative material containing animal excrement or vegetative material, including from an intensive farming process or industrial or trade process, into or onto land, or into or onto land in circumstances where a contaminant may enter water that does not meet one or more of the conditions in Rule 5.29 is a **discretionary activity**.	

Stock Holding Areas and Animal Effluent

5.31 The use of land for a stock holding area is a **permitted activity**, provided the following conditions are met: 1. The stock holding area is not: (a)within 20 m of a surface water body, a bore used for water abstraction or the Coastal Marine Area; or (b)within 100 m of a pre-existing dwelling or place of assembly on another property; and 1. A The stock holding area is not located within a Group or Community Drinking-water Protection Zone as set out in Schedule 1; and 2. All liquid animal effluent, washdown water or stormwater containing animal effluent is collected and disposed of to an animal effluent collection and storage system authorised under Rules 5.33 to 5.37 or an existing discharge permit; and 3. The base of any stock holding area located on land over an unconfined or semi-confined aquifer shall be sealed such that seepage into land does not exceed one millimetre per day.	
5.32 The use of land for a stock holding area that does not meet one or more of the conditions of Rule 5.31 is a **discretionary activity**.	
5.33 The use of land for the collection, storage and treatment of animal effluent is a **permitted activity**, provided the following conditions are met: 1. The land used for the collection, storage and treatment of animal effluent is not: (a)within 20 m of a surface water body (other than a wetland constructed primarily to treat animal effluent), a bore used for water abstraction or the Coastal Marine Area; or (b)within 50 m of the boundary of the property; or (c) within a Group or Community Drinking-water Protection Zone as set out in Schedule 1; and 2. The collection, storage and treatment system is sealed, such that seepage into land does not exceed one millimetre per day.	
5.34 The use of land for the collection, storage and treatment of animal effluent that does not meet one or more of the conditions of Rule 5.33 is a **discretionary activity**.	
5.35 The discharge of animal effluent or water containing animal effluent and other contaminants originating from a stock truck holding tank onto or into land where a contaminant may enter water is a **permitted activity**, provided the following conditions are met…	
5.36 The discharge of animal effluent or water containing animal effluent and other contaminants originating from: (a)a stock holding area; or (b)a stock truck holding tank that does not meet one or more of the conditions of Rule 5.35; or (c)an animal effluent storage facility; onto or into land where a contaminant may enter water is a **restricted discretionary activity**, provided the following conditions are met: 1. The discharge of animal effluent or water containing animal effluent and other contaminants: (a)is not within 20 m of a surface water body (other than a wetland constructed primarily to treat animal effluent), a bore used for water abstraction or the Coastal Marine Area; and (b)does not occur beyond the boundary of the property on which the animal effluent is generated unless the written approval of the property owner where the discharge occurs has been obtained; and (c) is not within a Group or Community Drinking-water Protection Zone as set out in Schedule 1; and (d) has backflow prevention installed if the animal effluent or water containing animal effluent is applied with irrigation water; and (e) is not to contaminated or potentially contaminated land; and 2. The discharge is the subject of a Farm Environment Plan that has been prepared in accordance with Schedule 7 Part A. The exercise of discretion is restricted to the following matters: 1.Measures to avoid, mitigate or remedy adverse effects on aquatic ecosystems and human or animal drinking-water; and	

2.Effluent and water application rates and nutrient load; and 3.The effectiveness of methods to store effluent and application rates in times of adverse weather conditions, including frozen or saturated soil, or in cases of equipment failure; and 4.The proximity of any discharge site to, and actual or potential effects on, any identified site of significant indigenous biodiversity on biodiversity; and 5.The adequacy of design, construction, systems and management processes to minimise fugitive discharges from the system, including, but not limited to, mitigation in case of equipment failure or breakage; and 6. The quality of, compliance with, and auditing of the Farm Environment Plan.	
5.37 Any discharge of animal effluent or water containing animal effluent or other contaminants that does not meet one or more of the conditions in Rule 5.35 or Rule 5.36 or that is directly into water (other than into a wetland constructed primarily to treat animal effluent) is a **non-complying activity**.	

Silage Pits and Compost

5.38 The use of land for a silage pit or the stockpiling of decaying organic matter (including compost) and any associated discharge into or onto land where a contaminant may enter water is a **permitted activity** provided the following conditions are met: 1.The volume of any silage pit or stockpile is less than 20 m3; and 2.Any liquid that drains from the stockpile does not enter a surface water body, other than a wetland constructed primarily to treat animal effluent; and 3. Any decaying organic matter does not originate from an industrial or trade process.	
5.39 The use of land for a silage pit or the stockpiling of other decaying organic matter (including compost) not permitted by Rule 5.38 and any associated discharge into or onto land where a contaminant may enter water is a **permitted activity** provided the following conditions are met: 1. The silage pit or stockpile is not sited: (a) within 50 m of a surface water body, the boundary of the property, a bore or the Coastal Marine Area; or (b) within a Group or Community Drinking-water Protection Zone as set out in Schedule 1; or (c) within the Christchurch Groundwater Protection Zone as shown on the Planning Maps; and 2. Any liquid that drains from the silage pit or stockpile does not enter a surface water body, other than a wetland constructed primarily to treat effluent; and 3. Any decaying organic matter does not originate from an industrial or trade process.	
5.40 The use of land for a silage pit or the stockpiling of other decaying organic matter (including compost) and any associated discharge into or onto land where a contaminant may enter water, that does not meet one or more of the conditions in Rule 5.39 is a **restricted discretionary activity** where the following condition is met: 1. The silage pit, stockpile, and discharge is the subject of a Farm Environment Plan that has been prepared in accordance with Schedule 7 Part A. The exercise of discretion is restricted to the following matters: 1. The actual or potential environmental effects of not meeting the condition or conditions of Rule 5.38; and 2. The quality of, compliance with and auditing of the Farm Environment Plan. Note: Rules 5.38 to 5.40 do not apply to the storage of baled and wrapped silage, whether stored in individual bales or a continuous tube.	Note Exclusion for Baled silage

Nutrient Management

Note: The Nutrient Management Rules set out a different set of rules for each of the five Nutrient Allocation Zones that are shown on the series A Planning Maps (Lake, Red, Orange, Green and Light Blue). Overlaying the rules for each Nutrient Allocation Zone are alternative rules that may apply if nutrient management is being undertaken by an irrigation scheme or principal water supplier.

All Nutrient Allocation Zones	
5.41 Notwithstanding any of Rules 5.43 to 5.59, the use of land for a farming activity is a **permitted activity**, provided one of the following conditions is met: 1.The property is less than 5 hectares in area; or 2. The nitrogen loss calculation for the property does not exceed 10 kg per hectare per annum and the property is not in a Lake Zone.	
5.42 Where any property includes land in more than one Nutrient Allocation Zone, as shown on the Planning Maps, the rules for each Nutrient Allocation Zone apply respectively only to the part of the property within that Zone.	
Red Nutrient Allocation Zones	
5.43 The use of land for a farming activity is a **permitted activity**, provided the following conditions are met: 1.The nitrogen loss calculation for the part of the property within the Red Nutrient Allocation Zone is greater than 10 kg per hectare per annum but does not exceed 20 kg per hectare per annum; and 2.The nitrogen loss calculation for the part of the property within the Red Nutrient Allocation Zone does not increase above the nitrogen baseline.	
5.44 Until the 1st of January 2017, the use of land for a farming activity is a **permitted activity**, provided the following conditions are met: 1.The nitrogen loss calculation for the part of the property within the Red Nutrient Allocation Zone is greater than 20 kg per hectare per annum; and 2.The nitrogen loss calculation for the part of the property within the Red Nutrient Allocation Zone **does not increase above the nitrogen baseline**.	Permitted activity but nitrogen losses cannot increase above 2009-13 baseline
5.45 From the 1st of January 2017, the use of land for a farming activity is a **restricted discretionary activity**, provided the following conditions are met: 1.The nitrogen loss calculation for the part of the property within the Red Nutrient Allocation Zone is greater than 20 kg per hectare per annum; and 2.The nitrogen loss calculation for the part of the property within the Red Nutrient Allocation Zone does not increase above the nitrogen baseline; and 3.**A Farm Environment Plan has been prepared in accordance with Schedule 7 Part A**. The exercise of discretion is restricted to the following matters: 1.The quality of, compliance with and auditing of the Farm Environment Plan; and 2.The proposed management practices to avoid or minimise the discharge of nitrogen, phosphorus, sediment and microbiological contaminants to water from the use of land; and 3. The potential benefits of the activity to the applicant, the community and the environment; and 4. The potential effects of the land use on surface and groundwater quality and sources of drinking-water.	Require a Farm Environment Plan from 2017

5.46 The use of land for a farming activity as part of a farming enterprise is a **discretionary activity**, provided the following conditions are met: 1.A Farm Environment Plan has been prepared in accordance with Schedule 7 Part A; and 2.The nitrogen loss calculation for the farming enterprise does not increase above the nitrogen baseline; and 3.The properties comprising the farming enterprise are in the same surface water catchment and Nutrient Allocation Zone, as shown on the Planning Maps.	No opportunity to increase N losses above baseline
5.47 The use of land for a farming activity that does not comply with condition 3 of Rule 5.45 or condition 1 or 3 of Rule 5.46 is a **non-complying activity**.	
5.48 The use of land for a farming activity that does not comply with condition 2 of Rule 5.43 or condition 2 of Rule 5.44 or condition 2 of Rule 5.45 or condition 2 of Rule 5.46 is a **prohibited activity**.	
Lake Zones	
5.49 The use of land for a farming activity is a **controlled activity**, provided the following conditions are met: 1.The nitrogen loss calculation for the part of the property within the Lake Zone does not exceed 10 kg per hectare per annum; and 2.The nitrogen loss calculation for the part of the property within the Lake Zone does not increase above the nitrogen baseline; and 3.A Farm Environment Plan has been prepared in accordance with Schedule 7 Part A. The CRC reserves control over the following matters: 1.The quality of, compliance with and auditing of the Farm Environment Plan; and 2. The proposed management practices to avoid or minimise the discharge of nitrogen, phosphorus, sediment and microbiological contaminants to water from the use of land.	
5.50 The use of land for a farming activity is a **restricted discretionary activity**, provided the following conditions are met: 1.The nitrogen loss calculation for the part of the property within the Lake Zone is greater than 10 kg per hectare per annum; and 2.The nitrogen loss calculation for the part of the property within the Lake Zone does not increase above the nitrogen baseline; and 3.A Farm Environment Plan has been prepared in accordance with Schedule 7 Part A. The exercise of discretion is restricted to the following matters: 1.The quality of, compliance with and auditing of the Farm Environment Plan; and 2.The proposed management practices to avoid or minimise the discharge of nitrogen, phosphorus, sediment and microbiological contaminants to water from the use of land; and 3. The potential benefits of the activity to the applicant, the community and the environment; and 4. The potential effects of the land use on surface and groundwater quality and sources of drinking-water.	
5.51 The use of land for a farming activity that does not comply with condition 3 of Rule 5.49 or condition 3 of Rule 5.50 is a **non-complying activity**.	
5.52 The use of land for a farming activity that does not comply with condition 2 of Rule 5.49 or condition 2 of Rule 5.50 is a **prohibited activity**.	

Orange Nutrient Allocation Zones	
5.53 The use of land for a farming activity is a **permitted activity**, provided the following conditions are met: 1.The nitrogen loss calculation for the part of the property within the Orange Nutrient Allocation Zone does not exceed 20 kg per hectare per annum and information is recorded in accordance with Schedule 7 Part D, and supplied to the Canterbury Regional Council upon request; or 2.The nitrogen loss calculation for the part of the property within the Orange Nutrient Allocation Zone exceeds 20 kg per hectare per annum and: (a) information is recorded in accordance with Schedule 7 Part D, and supplied to the Canterbury Regional Council upon request; and (b)the property is less than 50 hectares in area; and (c)The nitrogen loss calculation for the part of the property within the Orange Nutrient Allocation Zone does not increase above the nitrogen baseline;	
5.54 Until 1 January 2016, the use of land for a farming activity that does not comply with Rule 5.53 is a **permitted activity**, provided the following condition is met: 1. The nitrogen loss calculation for the part of the property within the Orange Nutrient Allocation Zone does not increase above the nitrogen baseline by more than 5 kg per hectare per annum.	
5.55 From 1 January 2016, the use of land for a farming activity that does not comply with Rule 5.53 is a **restricted discretionary** activity, provided the following conditions are met: 1.The nitrogen loss calculation for the part of the property within the Orange Nutrient Allocation Zone does not increase above the nitrogen baseline by more than 5 kg per hectare per annum; and 2.A Farm Environment Plan has been prepared in accordance with Schedule 7 Part A. The exercise of discretion is restricted to the following matters: 1.The quality of, compliance with and auditing of the Farm Environment Plan; and 2.The proposed management practices to avoid or minimise the discharge of nitrogen, phosphorus, sediment and microbiological contaminants to water from the use of land; and 3.The potential benefits of the activity to the applicant, the community and the environment; and 4. The potential effects of the land use on surface and groundwater quality and sources of drinking-water.	
5.56 The use of land for a farming activity that does not comply with Rule 5.54 or condition 1 of Rule 5.55 is a **discretionary activity**.	
5.56A The use of land for a farming activity that does not comply with condition 2 of Rule 5.55 is a **non-complying activity**.	
Green and Light Blue Nutrient Allocation Zones	
5.57 The use of land for a farming activity is a **permitted activity**, provided the following conditions are met: 1.The nitrogen loss calculation for the part of the property within either the Green or Light Blue Nutrient Allocation Zone does not exceed 20 kg per hectare per annum and information is recorded in accordance with Schedule 7 Part D, and supplied to the Canterbury Regional Council upon request; or 2.The nitrogen loss calculation for the part of the property within either the Green or Light Blue Nutrient Allocation Zone is greater than 20 kg per hectare per annum and: (a) information is recorded in accordance with Schedule 7 Part D, and supplied to the Canterbury Regional Council upon request; and (b)the property is less than 50 hectares in area; or (c)the nitrogen loss calculation for the part of the property within either the Green or Light Blue Nutrient Allocation Zone does not increase above the nitrogen baseline by more than 5 kg per hectare per annum.	

5.58 The use of land for a farming activity that does not comply with Rule 5.57 is a **restricted discretionary activity**, provided the following condition is met: 1. A Farm Environment Plan has been prepared in accordance with Schedule 7 Part A. The exercise of discretion is restricted to the following matters: 1.The quality of, compliance with and auditing of the Farm Environment Plan; and 2.The proposed management practices to avoid or minimise the discharge of nitrogen, phosphorus, sediment and microbiological contaminants to water from the use of land; and 3. The potential benefits of the activity to the applicant, the community and the environment; and 4. The potential effects of the land use on surface and groundwater quality and sources of drinking-water.	
5.59 The use of land for a farming activity that does not comply with Rule 5.58 is a **noncomplying** activity.	
Irrigation Schemes	
5.60 Notwithstanding Rules 5.43 to 5.59, the use of land for a farming activity is a **permitted activity**, provided the following conditions are met: 1. The property is irrigated with water from an irrigation scheme or a principal water supplier, and the irrigation scheme or a principal water supplier holds a discharge permit that specifies the maximum annual amount of nitrate-nitrogen that may be discharged or leached under Rule 5.62 or the discharge or leaching is a permitted activity under Rule 5.61. Note: If a property is irrigated with water from an irrigation scheme or principal water supplier that does not hold a discharge permit under Rule 5.62 or is not a permitted activity under Rule 5.61, then it is assessed under Rules 5.43 to 5.59.	
5.61 Until 1 January 2017, the discharge of nutrients onto or into land in circumstances that may result in a contaminant entering water that would otherwise contravene s15(1) of the RMA is a **permitted activity**, provided the following conditions are met: 1. There is an existing consent, held by an irrigation scheme or a principal water supplier, that has conditions that specify the maximum amount or rate at which nutrients may be discharged or leached from the subject land; and 2. The consent was granted prior to 11 August 2012.	
5.62 The discharge of nutrients onto or into land in circumstances that may result in a contaminant entering water that would otherwise contravene s15(1) of the RMA is a **discretionary activity**, provided the following condition is met: 1. The applicant is an irrigation scheme or a principal water supplier, or the holder of the discharge permit will be an irrigation scheme or a principal water supplier. **Notification** Pursuant to sections 95A and 95B of the RMA an application for resource consent under this rule will be processed and considered without public or limited notification, provided that: 1.The nutrient loss is equal to or less than that currently authorised through conditions on a water permit to take and use water; or 2.The nutrient loss is equal to or less than the aggregation of the nutrient baseline across properties within the command area, calculated on a surface water catchment basis. Note that limited notification to affected order holders in terms of section 95F of the RMA will be necessary , where relevant, under section 95B(3) of the RMA. Note: If the applicant is not an irrigation scheme or a principal water supplier, or the holder of the discharge permit will not be an irrigation scheme or a principal water supplier, then the discharge is assessed under Rules 5.63 to 5.64.	

Incidental Nutrient Discharges	
5.63 The discharge of nutrients onto or into land in circumstances that may result in a contaminant entering water that would otherwise contravene s15(1) of the RMA is a **permitted activity**, provided the following conditions are met: 1.The land use activity associated with the discharge is authorised under Rules 5.41 to 5.59; or 2.The land use activity associated with the discharge is authorised under Rules 10.1, 10.2, 11.1 or 11.1A of the Hurunui-Waiau River Regional Plan.	
5.64 The discharge of nutrients onto or into land in circumstances that may result in a contaminant entering water that would otherwise contravene s15(1) of the RMA and does not meet condition 1 of Rules 5.62 or conditions 1 or 2 of 5.63 is a **non-complying activity**.	

Fertiliser Use

5.65 The discharge of fertiliser onto or into land in circumstances where a contaminant may enter water is a **permitted activity** provided the following conditions are met: 1.There is no fertiliser discharged when the soil moisture exceeds field capacity; and 2.Where any permanently flowing river, lake, artificial watercourse or wetland has riparian planting from which stock is excluded, fertiliser may be discharged up to the paddock-side edge of the riparian planting, but not onto the riparian planting, except for fertiliser required to establish the planting; or 3.Where any permanently flowing river, lake, artificial watercourse or wetland does not have riparian planting from which stock is excluded, fertiliser is not discharged directly into or within 10 m of the bed or within 10 m of a wetland boundary or any identified significant indigenous biodiversity site or any identified significant indigenous biodiversity site Note: 1. The discharge of fertiliser may also be restricted by Rules 5.43 to 5.64	
5.66 The discharge of fertiliser from an aircraft onto or into land in circumstances where a contaminant may enter water and into any river is a **permitted activity** provided the following conditions are met: 1.There is no fertiliser discharged when the soil moisture exceeds field capacity there is water ponding on the surface of the land; and 2. Fertiliser is not discharged directly into or within 10 m of the bed of a permanently flowing river or artificial watercourse that is more than 2 m wide, any lake, or any wetland boundary or any significant indigenous biodiversity site identified in the relevant district plan and 5. The flight paths are recorded by an on-board differential global positioning system and this record is kept for at least 12 months following the discharge and made available to the CRC upon request. Note: The discharge of fertiliser may also be restricted by Rules 5.43 to 5.64.	
5.67 The discharge of fertiliser onto land, or onto or into land in circumstances where a contaminant may enter water that does not meet one or more of the conditions in Rule 5.65 or Rule 5.66 is a **restricted discretionary activity**, provided the following condition is met: 1. The discharge is a subject of a Farm Environment Plan that has been is prepared in accordance with Schedule 7 Part A. The CRC will restrict discretion to the following matters: 1.The actual or potential environmental effects of not meeting the condition or conditions of Rules 5.65 or 5.66; and 2.The potential benefits of the activity to the applicant, the community and the environment; and 3.The quality of, compliance with and auditing of the Farm Environment Plan.	

Stock Exclusion

5.68 The use and disturbance of the bed (including the banks) of a lake, river or a wetland by stock and any associated discharge to water is a **permitted activity**, provided the following conditions are met: 1.The use or disturbance of the bed (including the banks) of a lake, river or wetland and any associated discharge to water is not categorised as a non-complying activity under Rule 5.70 or a prohibited activity under Rule 5.71; and 2.The use or disturbance of the bed (including the banks) of a lake or river and any associated discharge to water is at a stock crossing point that is: (a)not more than 20 m wide; and (b)perpendicular to the direction of water flow, except where this is impracticable owing to the natural contours of the riverbed or adjoining land; and (c) aligns with a constructed track or raceway on either side of the crossing point; or 3. The use or disturbance of the bed (including the banks) of a lake or river and any associated discharge to water that is not at a permanent stock crossing point does not result in: (a) pugging or de-vegetation that exposes bare earth in the bed (including the banks) of a lake or river; or (b) a conspicuous change in colour or clarity of the water, outside the Mixing Zone; or (c) cattle standing in any lake or river; and 4. The disturbance of a wetland does not result in a conspicuous change in colour or clarity of water, or pugging or de-vegetation that exposes bare earth.	
5.69 The use and disturbance of the bed (including the banks) of a lake, river or a wetland by stock and any associated discharge to water that does not meet one or more of conditions 2 to 4 of Rule 5.68 and is not listed as a non-complying activity under Rule 5.70 or a prohibited activity under Rule 5.71 is a **discretionary activity**.	
5.70 Unless categorised as a prohibited activity under Rule 5.71, the use and disturbance of the bed (including the banks) of a lake, a river that is greater than 1 m wide or 100 millimetres deep (under median flow conditions), or a wetland, by intensively farmed stock and any associated discharge to water is a **non-complying activity**.	
5.71 The use and disturbance of the bed (including the banks) of a lake or river by any farmed cattle, farmed deer or farmed pigs and any associated discharge to water is a **prohibited activity** in the following areas: 1.In an inanga or salmon spawning site listed in Schedule 17; or 2.Within a Group or Community Drinking-water Protection Zone as listed in Schedule 1; or 3.Within 1000 m upstream, in the bed of a lake river, of a fresh water bathing site listed in Schedule 6; or 4.In the bed (including the banks) of a spring-fed plains river, as shown on the Planning Maps.	

Flow-sensitive Catchments

Note:
See Sub-regional Sections 6 to 15 of this Plan for location-specific requirements.

5.72 The replanting after harvest of areas of plantation forest within any flow-sensitive catchment listed in Sections 6 to 15 is a **permitted activity**, provided the following conditions are met…	
5.73 The planting of new areas of plantation forest within any flow-sensitive catchment listed in Sections 6 to 15 is a **controlled activity**, provided the forest planting meets the following conditions…	

5.74 The replanting after harvest of areas of plantation forest that does not meet the conditions of Rule 5.72 or the planting of new plantation forest that does not meet one or more of the conditions of Rule 5.73, within any flow-sensitive catchment listed in Sections 6 to 15 is a **restricted discretionary** activity.	

Drainage Water

5.75 The discharge of water that may contain contaminants from sub-surface or surface drains into an artificial watercourse, constructed wetland or into or onto land is a **permitted activity** provided the following conditions are met…	
5.76 The discharge of water that may contain contaminants from sub-surface or surface drains into an artificial watercourse, constructed wetland or into or onto land that does not meet one or more of the conditions of Rule 5.75 is a **discretionary activity**.	
5.77 The discharge of water that may contain contaminants from sub-surface or surface drains into a river, lake or wetland is a **permitted activity**, provided the following conditions are met: 1.The discharge of land drainage water is only from a drainage system, the full spatial extent of which existed at 3 July 2004; and …	LUDF drains on the South block established pre 2004
5.78 The discharge of water that may contain contaminants from sub-surface or surface drains into a river, lake or wetland that does not meet the conditions of Rule 5.77 is a **discretionary activity**.	
5.79 The discharge of contaminants and water from an artificial watercourse into an artificial watercourse, constructed wetland or into or onto land is a **permitted activity** provided the following conditions are met…	
5.80 The discharge of contaminants and water from an artificial watercourse into an artificial watercourse, constructed wetland or into or onto land that does not meet the conditions of Rule 5.79 is a **discretionary activity**.	

Cemeteries

See 5.81 – 5.83

Sewerage Systems

See 5.84 – 5.88

Municipal Solid Waste

See 5.89 – 5.90

Industrial and Trade Wastes

See 5.91 – 5.92

Stormwater

5.93 The discharge of stormwater from a reticulated stormwater system onto or into land or into or onto land in circumstances where a contaminant may enter water, or into groundwater or a surface water body is a **restricted discretionary activity** provided the following conditions are met…	

5.94 The discharge of stormwater from a reticulated stormwater system onto or into land or into or onto land in circumstances where a contaminant may enter water, or into groundwater or a surface water body that does not meet the conditions of Rule 5.93 is a **non complying activity**.	
5.95 The discharge of stormwater into a river, lake, wetland or artificial watercourse or onto land in circumstances where a contaminant may enter a river, lake, wetland, or artificial watercourse is a **permitted activity** provided the following conditions are met…	
5.96 The discharge of stormwater onto or into land where contaminants may enter groundwater is a **permitted activity** provided the following conditions are met…	
5.97 The discharge of stormwater into a river, lake, wetland or artificial watercourse or onto or into land in circumstances where a contaminant may enter water that does not meet one or more of the conditions of Rule 5.95 and Rule 5.96 is a **noncomplying discretionary activity** except that within the boundaries of Christchurch City it is a non complying activity.	

Other Minor Discharges of Contaminants

5.98 Any discharge of water or contaminants onto or into land in circumstances where a contaminant may enter groundwater that is not classified by any of the above rules, is a **permitted activity**, provided the following conditions are met…	
5.99 Any discharge of water or contaminants into surface water or onto or into land in circumstances where it may enter surface water that is not classified by any of the above rules, is a **permitted activity**, provided the following conditions are met…	
5.100 Any discharge that is not permitted by either Rule 5.98 or 5.99 and is not classified by any other rule in this Plan is a **discretionary activity**.	

Water Tracers

See 5.101 – 5.102

Bores

5.103 The use of land, including the bed of a lake or river, for the installation, maintenance and use of a bore, other than a bore for geotechnical investigation, or a water infiltration gallery is a **permitted activity** provided the following conditions are met…	
5.104 The use of land, including the bed of a lake or river, for the installation, maintenance and use of a bore for geotechnical investigation or monitoring is a **permitted activity** provided the following conditions are met…	
5.104A The use of land, including the excavating of the bed of a lake or river, for the use of a water infiltration gallery for emergency rural fire fighting is a **permitted activity** provided the following conditions are met…	
5.105 The use of land, including the bed of a lake or river, for the installation, maintenance and use of a bore or a water infiltration gallery that does not meet one or more of the conditions in Rule 5.103, or 5.104 or 5.104A is a **discretionary activity.** Note: The "use" of a bore or gallery does not authorise the taking or use of water.	
5.106 The use of land, including the bed of a lake or river, for the installation, maintenance and use of a bore for hydrocarbon exploration or production is a **discretionary activity**.	
5.107 The use of land, including the bed of a lake or river, for the decommissioning of a bore, other than a bore for geotechnical investigation or a hydrocarbon bore is a **permitted activity**, provided the following conditions are met…	
5.108 The use of land, including the bed of a lake or river, for the decommissioning of a bore, other than a bore for geotechnical investigation or a hydrocarbon bore, that does not meet one or more of the conditions in Rule 5.107 is a **discretionary activity**.	

5.109 The taking of water from groundwater for the purposes of carrying out bore development or pumping tests, or incidental to geotechnical investigations, and the associated use and discharge of that water is a **permitted activity**, provided the following conditions are met…	
5.110 The taking of water from groundwater for the purposes of carrying out bore development or pumping tests, or incidental to geotechnical investigations, and the associated use and discharge of that water that does not meet one or more of the conditions in Rule 5.109 is a **restricted discretionary** activity.	

Small and Community Water Takes

Interpretation

1. The rules relating to small and community water takes and construction, including road maintenance (Rules 5.111 to 5.120) are the only rules in Section 5 relating to water takes that apply to small and community water takes and construction, including road maintenance. If a small or community water take does not comply with the relevant conditions, then it is considered under the rules for other water takes (Rules 5.121 to 5.132). Specific rules in Sections 6 to 15 can still over-ride these Section 5 rules.

2. Nothing in this Plan affects an individual's right to take water in accordance with section 14(3)(b) of the RMA.

3. Takes for drinking water supplies will also need to comply with other requirements including The National Environmental Standard for Sources of Human Drinking Water Regulations 2007 and the Health (Drinking Water) Amendment Act 2007.

5.111 The take and use of water from a river, lake or an artificial watercourse is a **permitted activity** provided the following conditions are met…	
5.112 The take and use of water from any river or part of a river, or lake, that is subject to a Water Conservation Order is a **restricted discretionary activity** provided the following conditions are met…	
5.113 The taking and using of less than 5 L/s and 10 m3 per day of groundwater is a **permitted activity** provided the following condition is complied with: 1. The bore, other than a sampling or monitoring bore, is located more than 20 m from the site boundary where that adjoining site is in different ownership, or any surface water body.	
5.114 The taking and using of less than 5 L/s and more than 10 m3 but less than 100m3 per day of groundwater is a **permitted activity** provided the following conditions are complied with: 1. The site is more than 20 ha in area; and 2. The bore is located more than 20 m from the site boundary where that adjoining site is in different ownership or any surface water body.	
5.115 The taking and using of water for a community water supply from groundwater or surface water is a **restricted discretionary activity** provided the following conditions are complied with…	

Water for Construction and Maintenance

5.116 The taking and using of water from a river, lake or an artificial watercourse for infrastructure construction, maintenance and repair is a **permitted activity**, provided the following conditions are met…	
5.117 The taking and using of water from any river or part of a river that is subject to a Water Conservation Order, for infrastructure construction, maintenance and repair is a **restricted discretionary activity**.	
5.118 The taking and using of water from a river, lake or an artificial watercourse for infrastructure construction, maintenance and repair, other than from any river or part of a river that is subject to a Water Conservation Order, that does not meet one or more of the conditions in Rule 5.116 is a **discretionary activity**.	

Site Dewatering – Groundwater

See 5.119 – 5.120

Water from Canals or Water Storage

5.121 The taking or use of water from irrigation or hydroelectric canals or water storage facilities is a **permitted activity**, provided the following conditions are met…	
5.122 The taking or use of water from irrigation or hydroelectric canals or water storage facilities that does not meet one or more of the conditions in Rule 5.121 is a **discretionary activity**.	

Take and Use Surface Water

Note: See Sub-regional Sections 6 to 15 of this Plan or existing catchment-based Regional Plans for location-specific requirements.

5.123 The taking and use of surface water from a river or lake is a **restricted discretionary activity**, provided the following conditions are met…	
5.124 The taking and use of surface water from a river or lake that does not meet condition 2 or 3 in Rule 5.123 5.96 is a **non-complying activity**.	
5.125 The taking and use of surface water from a river or lake that does not meet condition 1 in Rule 5.123 is a **prohibited activity**. Note: Activities that qualify as permitted under Rules 5.111, 5.115, 5.116 and 5.121 are not Prohibited Activities under Rule 5.125.	
5.126 The non-consumptive taking and use of water from a lake, river or artificial watercourse and discharge of the same water to the same lake, river or artificial watercourse is a **restricted discretionary activity**, provided the following conditions are met…	
5.127 The non-consumptive taking and use of water from a lake, river or artificial watercourse and discharge of the same water to the same lake, river or artificial watercourse that does not meet one or more of the conditions in Rule 5.126 is a **non-complying activity**.	

Take and Use Groundwater

Note: See Sub-regional Sections 6 to 15 of this Plan or existing catchment-based Regional Plans for location-specific requirements.

5.128 The taking and use of groundwater is a **restricted discretionary activity**, provided the following conditions are met: 1. The take is from within a Groundwater Allocation Zone on the Planning Maps; and 2. Unless the proposed take is the replacement of a lawfully established take affected by the provisions of section 124-124C of the RMA, for stream depleting groundwater takes, the take, in addition to all existing resource consented surface water takes, complies with does not result in any exceedance of any the environmental flow and allocation limits set in Sections 6 to 15 for that surface water body in accordance with Schedule 9; and 3. Unless the proposed take is the replacement of a lawfully established take affected by the provisions of section 124-124C of the RMA, the seasonal or annual volume of the groundwater take, in addition to all existing consented takes, as determined by the method in Schedule 13 does not exceed the groundwater allocation limits for the relevant Groundwater Allocation Zone in Sections 6 to 15; and 4. The bore interference effects are acceptable, as determined in accordance with Schedule 12.	

5.129 The taking and use of groundwater that does not meet one or more of conditions 1 and 4 in Rule 5.128 is a **non-complying activity**.	
5.130 The taking and use of groundwater that does not meet one or more of conditions 2 and 3 in Rule 5.128 is a **prohibited activity**. Note: Activities that qualify as permitted under Rules 5.113, 5.114, 5.115 and 5.119 are not Prohibited Activities under Rule 5.130.	
5.131 The non-consumptive taking and using of groundwater, including for heating or cooling purposes, and the associated discharge to groundwater, is a **permitted activity** provided the following conditions are met…	
5.132 The non-consumptive taking and use of ground water and associated discharge to groundwater that does not meet one or more of the Conditions in Rule 5.131 is a **discretionary activity**.	

Transfer of Water Permits

5.133 The temporary or permanent transfer, in whole or in part, (other than to the new owner of the site to which the take and use of the water relates and where the location of the take and use of water does not change) of a water permit to take or use surface water or groundwater, is a **restricted discretionary activity**, provided the following conditions are met…	
5.134 The temporary or permanent transfer, in whole or in part, of a water permit to take or use surface water or groundwater that does not meet one or more of the conditions of Rule 5.133 is a **non-complying activity**.	

Structures

Note: For all activities in or near waterways, refer also to requirements and restrictions under the Canterbury Regional Council Flood Protection and Drainage Bylaw 2013.

5.135 The placement, use, altering, reconstruction, maintenance or removal of pipes, ducts, cables or wires over the bed of a lake or river, whether attached to a structure or not, and associated support structures is a **permitted activity**, provided the following conditions are met…	
5.136 The drilling, tunnelling, or disturbance in or under the bed of a lake or river and the installation, maintenance, or removal of pipes, ducts, cables or wires is a **permitted activity**, provided the following conditions are met…	
5.137 The installation, alteration, extension, use, maintenance or removal of bridges and culverts, and the consequential deposition of substances on, in or under the bed of a lake or river, the excavation or other disturbance of the bed of a lake or river, and, in the case of culverts, the associated take, discharge or diversion of water is a **permitted activity**, provided the following conditions are met…	
5.138 The installation, maintenance, use and removal of defences against water including the associated deposition of substances on, in or under the bed of a lake or river and excavation associated diversions and discharges of sediment8 or other disturbance of the bed of a lake or river is a **permitted activity**, provided the following conditions are met:	
5.139 The use and maintenance of structures, excluding dams, on, in or under the bed of a lake or river are **permitted activities**, provided the following conditions are met…	
5.140 Despite any other rule in this Plan, temporary structures and diversions associated with undertaking activities in Rules 5.135 to 5.140, military training activities, or artificial watercourses are **permitted activities**, provided the following conditions are met…	
5.141 Temporary discharges to water or to land in circumstances where a contaminant may enter water associated with undertaking activities in Rules 5.135 to 5.140 or in relation to artificial watercourses are **permitted activities**, provided the following conditions are met..	
5.142 The diversion of surface run-off water caused by flooding is a **permitted activity**, provided the following conditions are met:	
5.143 Any structure, excluding dams, but including any associated diversions and discharges in the	

bed of a lake or river that does not comply with Rules 5.135 to 5.142 is a **discretionary activity**.	
5.144 Where not classified by any other Rule in this plan, the diversion or discharge of water and contaminants as a result of the excavation and disturbance of a river or lake bed, or the establishment of a structure or defence against water, is a **discretionary activity**.	

Refuelling in Lake and Riverbeds

See 5.145 – 5.146

Gravel from Lakes and Riverbeds

See 5.147 – 5.153

Dams and Damming

See 5.154 – 5.158

Wetlands

5.159 The enhancing, restoring or creating of a wetland, including the associated taking, use, damming or diversion of water from groundwater or surface water, and discharge of excess or overflow water from the wetland into surface water is a **permitted activity** if the following conditions are met: 1. The taking, use, damming or diversion of water is at a maximum rate of 5 L/s and 100 m3 per day; and 2. The taking of water is non-consumptive, is discharged back into the same waterbody and complies with any limits in Sections 6 to 15 of this Plan or any other Regional Plan for the relevant water body; and 3. The taking of water does not prevent water being taken by any domestic or stock water supply.	Wetland construction is being considered at LUDF
5.160 The enhancing, restoring or creating of a wetland that does not comply with one or more of the conditions in Rule 5.159 is a **discretionary activity**.	
5.161 Reducing the area of a wetland for the operation, maintenance or repair of existing infrastructure or construction of new infrastructure for transport, electricity or water distribution or reticulation, including vegetation clearance and earthworks and the taking, use, damming or diversion (including draining) of water and the associated discharge of any water onto land or into a river, lake, artificial watercourse or wetland is a **restricted discretionary activity**.	
5.162 Reducing the area of a wetland by the taking, use, damming or diversion (including draining) of water or other means, including vegetation clearance, cultivation, burning or earthworks, except as provided for in Rule 5.161 is a **non-complying activity.**	

Vegetation in Lake and River Beds

See 5.163 – 5.166

Earthworks and Vegetation Clearance in Riparian Areas

See 5.167 – 5.169

Vegetation Clearance and Earthworks in Erosion-prone Areas

See 5.170 – 5.174

Earthworks over Aquifers

5.175 The use of land to excavate material is a **permitted activity**, provided the following conditions are met…	
5.176 The use of land to excavate material that does not comply with one or more of the conditions of Rule 5.175 is a **restricted discretionary activity**.	
5.177 The use of land for the deposition of more than 50 m3 of material in any consecutive 12 month period onto land which is excavated to a depth in excess of 5 m below the natural land surface and is located over an unconfined or semi-confined aquifer, where the seasonal high water table is less than 5 m below the deepest point in the excavation is a **controlled activity**, provided the following conditions are met…	
5.178 The use of land for the deposition of more than 50 m3 of material in any consecutive 12 month period onto land which is excavated to a depth in excess of 5 m below the natural land surface and is located over an unconfined or semi-confined aquifer, where the seasonal high water table is less than 5 m below the deepest point in the excavation that does not comply with the conditions of Rule 5.160 is a **restricted discretionary activity**.	

Hazardous Substances

5.179 The use of land for the storage in a portable container and use of a hazardous substance listed in Part A of Schedule 4 is a **permitted activity** provided the following conditions are met…	
5.180 The use of land for the storage in a portable container and use of a hazardous substance listed in Part A of Schedule 4 that does not meet one or more of the conditions in Rule 5.179 is a **restricted discretionary activity**.	
5.181 The use of land for the storage, other than in a portable container, and use of a hazardous substance listed in Part A of Schedule 4 is a **permitted activity** provided the following conditions are met…	
5.182 The use of land for the storage, other than in a portable container, and use of a hazardous substance listed in Part A of Schedule 4 that does not meet one or more of the conditions in Rule 5.181 is a **discretionary activity**.	
5.183 The use of land for the decommissioning of a container located on, in or under land that is or has been used to store a hazardous substance is a **permitted activity** provided the following condition is met…	
5.184 The use of land for the decommissioning of a container located on, in or under land that is or has been used to store a hazardous substance that does not meet one or more of the conditions in Rule 5.183 is a **discretionary activity**.	

Contaminated Land

5.185 The use of land for a site investigation to assess concentrations of hazardous substances that may be present in the soil is a **permitted activity** provided the following conditions are met…	
5.186 The use of land for a site investigation to assess concentrations of hazardous substances that may be present in the soil that does not meet one or more of the conditions in Rule 5.185 is a **restricted discretionary activity**.	
5.187 The discharge of contaminants onto or into land from a contaminated site in circumstances where those contaminants may enter water is a **permitted activity** provided the following conditions are met…	
5.188 The discharge of contaminants onto or into land from a contaminated site in circumstances where those contaminants may enter water that does not meet one or more of the conditions in Rule 5.187 is a **discretionary activity**.	

Note: This summary is condensed for the purposes of the time available at the LUDF focus day (20th February 2014) and should be used only as a general indication of the content of the LWRP.

Schedule 7 - Farm Environment Plan

Part A – Farm Environment Plans

A Farm Environment Plan can be based on either of:
1. The material set out in Part B below;
OR
2. Industry prepared Farm Environment Plan templates and guidance material that:
(a) Include the following minimum components:
(i) The matters set out in 1, 2, and 3 of Part B below;
(ii) Contains a methodology that will enable development of a plan that will identify actual and potential environmental effects and risks specific to the property, addresses those effects and risks and has a high likelihood of appropriately avoiding, remedying or mitigating those effects;
(iii) Performance measures that are capable of being audited as set out in Part C below; and
(b) Has been approved as meeting the criteria in (a) and being acceptable to the Canterbury Regional Council by the Chief Executive of the Canterbury Regional Council.

Part B – Farm Environment Plan Default Content

The plan requirements will apply to:
1. a plan prepared for an individual property or farm enterprise; or
2. a plan prepared for an individual property which is part of a collective of properties, including an irrigation scheme, principal water supplier, or an Industry Certification Scheme

The plan shall contain as a minimum:

1. Property or farm enterprise details
    a. Physical address
    b. Description of the ownership and name of a contact person
    c. Legal description of the land and farm identifier
2. A map(s) or aerial photograph at a scale that clearly shows:
    a. The boundaries of the property or land areas comprising the farm enterprise.
    b. The boundaries of the main land management units on the property or within the farm enterprise.
    c. The location of permanent or intermittent rivers, streams, lakes, drains, ponds or wetlands.
    d. The location of riparian vegetation and fences adjacent to water bodies.
    e. The location on all waterways where stock access or crossing occurs.
    f. The location of any areas within or adjoining the property that are identified in a District Plan as "significant indigenous biodiversity".

3. A list of all Canterbury Regional Council resource consents held for the property or farm enterprise.

4. An assessment of the adverse environmental effects and risks associated with the farming activities and how the identified effects and risks will be managed, including irrigation, application of nutrients, effluent application, stock exclusion from waterways, offal pits and farm rubbish pits.

5 A description of how each of the following management objectives will, where relevant, be met.
    a) Nutrient management: To maximise nutrient use efficiency while minimising nutrient losses to water.
    b) Irrigation management: To operate irrigation systems efficiently and ensuring that the actual use of water is monitored and is efficient.

c) Soils management: To maintain or improve the physical and biological condition of soils in order to minimise the movement of sediment, phosphorus and other contaminants to waterways.
d) Collected animal effluent management: To manage the risks associated with the operation of effluent systems to ensure effluent systems are compliant 365 days of the year.
e) Livestock management: To manage wetlands and water bodies so that stock are excluded as far as practicable from water, to avoid damage to the bed and margins of a water body, and to avoid the direct input of nutrients, sediment, and microbial pathogens.
f) Offal pits: to manage the number and locations of pits to minimise risks to health and water quality

The plan shall include for each objective in 5 above

a. detail commensurate with the scale of the environmental effects and risks;
b. defined measurable targets that clearly set a pathway and timeframe for achievement and set out defined and auditable "pass/fail" criteria;
c. a description of the good management practices together with actions required;
d. the records required to be kept for measuring performance and achievement of the target.

6 Nutrient budgets, prepared by a suitably qualified person, using the OVERSEER™ nutrient budget model, or equivalent model approved by the Chief Executive of Environment Canterbury, for each of the identified land management units and the overall farm or farm enterprise.

Part C – Farm Environment Plan Audit Requirements

The Farm Environment Plan must be audited by a Farm Environment Plan Auditor who is independent of the farm being audited (i.e. is not a professional adviser for the property) and has not been involved in the preparation of the Farm Environment Plan.

The farming activity occurring on the property will be audited against the following minimum criteria:

1. An assessment of the performance against the objectives, targets, good practices and timeframes in the Farm Environment Plan;
2. An assessment of the robustness of the nutrient budget/s;
3. An assessment of the efficiency of water use (if irrigated).

Part D – Farming Information

Whenever one of Rules 5.41-5.58 requires information to be submitted, the following is to be provided:
1. The OVERSEER™, or equivalent model approved by the Chief Executive of Environment Canterbury, input and output files for the property; or
2. Information detailing:
(a) The site area to which the farming activity relates;
(b) Monthly stocking rates (numbers, types and classes) including breakdown by stock class;
(c) Annual yield of arable or horticultural produce;
(d) A description of the farm management practices used on each block including:
(i) Ground cover – pasture, crops, fodder crops, non-grazed areas (including forestry, riparian and tree areas) and any crop rotation;
(ii) Stock management – lambing/calving/fawning dates and percentages, any purchases and sales and associated dates, types and age of stock;
(iii) Fertiliser application – types and quantities per hectare for each identified block, taking into account any crop rotation;
(iv) Quantities of introduced or exported feed;

(e) Farm animal effluent, pig farm effluent, feed pad and stand-off pad effluent management including:
  (i) Area of land used for effluent application;
  (ii) Annual nitrogen loading rate and nitrogen load rate per application;
  (iii) Instantaneous application rate;
(f) Irrigation – areas, rates, monthly volumes and system type.

The information is to be collated for the period 1 July to 30 June in the following year and be provided annually, no later than 31 of October.

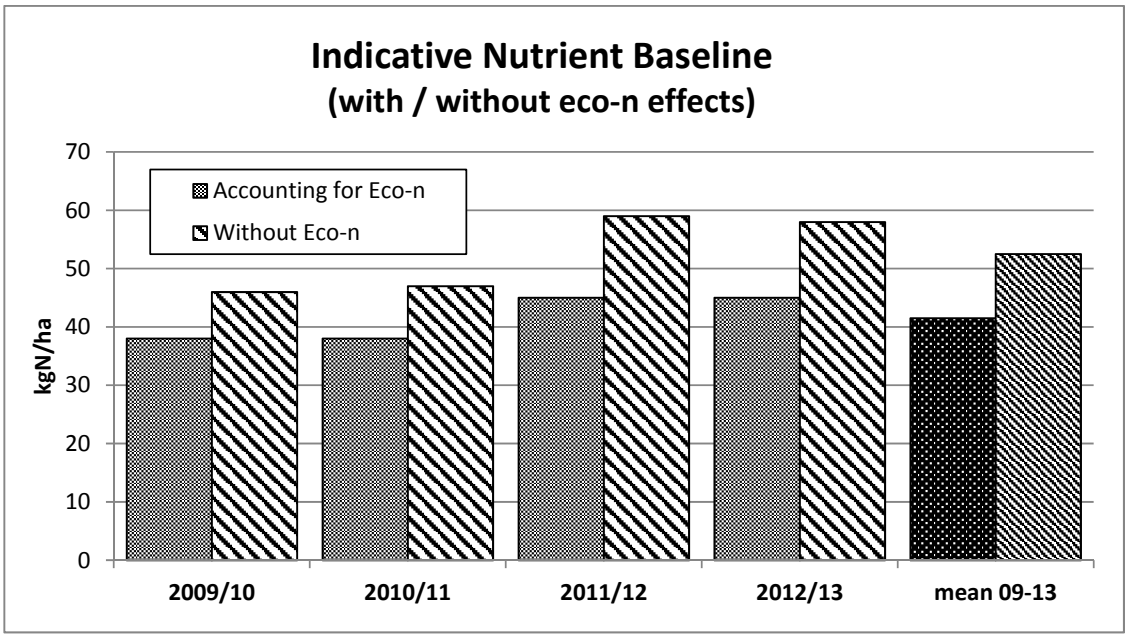
Comparison of approaches in proposed Land and Water Regional Plan (PLWRP) and Selwyn Waihora sub-regional section (Variation 1)

Please note this is a high-level comparison (please contact Environment Canterbury for more details).

Topic	LWRP	Selwyn Waihora
Ngai Tahu values in the management of SW catchment	General region-wide policies	Recognises Te Waihora and its tributaries as Cultural Landscape/Values Management Area with direction on the activities that need to be controlled in this area to protect the values and lake health.
Managing agriculture diffuse discharges		
N load from agriculture	No load limit. Load is likely to be at least 5,600tN/yr comprising current land use, addition from gradual intensification allowed and CPW under consented conditions	Load limit of 4,830tN/yr
On-farm N loss rates	Greater losses than GMP loss rate (2009-2013 N baseline)	GMP loss rates from 2017 and 15% better than GMP loss rates from 2022
Nutrient Allocation Zones (NAZ)	Three NAZ in catchment: Most is "red" zone; "Little Rakaia" area is "orange except for area upstream of Coopers Lagoon/Muriwai which is a "sensitive lake" zone	Single NAZ for all of area covered by sub-regional section
Land use intensification	Can intensify up to 10kgN/ha/yr except in sensitive lake zone	Can intensify up to 15kgN/ha/yr
Irrigation scheme N load allocation	CPW can apply for a load	CPW allocated N load
"Consent" to farm	Consent required from 2017 if losses greater than 20kgN/ha/yr	Consent required from 2017 if losses greater than 15kgN/ha/yr
Farm environment plans	Required if N losses greater than 20kgN/ha/yr (or 10kgN/ha/yr in sensitive lake zone). Schedule describing FEP requirements. Auditing required but no indication of how often.	Required for all properties larger than 20ha in size (10ha size in Cultural Landscape/Values Management Area). Revised schedule describing FEP requirements. Same auditing requirements as PLWRP.
Nutrient records and reporting	All properties larger than 5 ha required to keep records to be able to calculate nitrogen baseline (2009 – 2013). No reporting requirement.	As per PLWRP.

Topic	LWRP	Selwyn Waihora
Regulated farm practices	Rules relating to stored animal effluent, stock access and activities in river beds	In addition to LWRP rules must meet codes of practices for fertiliser application and irrigation system management and requirements relating to winter grazing and cultivation adjacent to waterways.
Stock exclusion	Controls stock access to rivers, lakes and wetlands	As per LWRP plus controls stock access to drains
Managing point source discharges		
N load limit for community sewerage schemes and industrial discharges	No limit	Sets limit (providing for 10% growth for industrial discharges and planned urban growth for sewerage schemes)
Management of point source discharges	Rules and policies	As per PLWRP with more explicit requirement for adoption of Best Practicable Option
Sustainable use of water & improved flows		
Integration of surface and groundwater	Surface and groundwater managed as separate resources	Surface and groundwater managed as one resource in Plains catchments. Kaituna managed as separate surface water and groundwater resources.
Water allocation zones	Rakaia-Selwyn and Selwyn-Waimakariri groundwater allocation zones plus about 50 surface water allocation zones	Rakaia-Selwyn, Selwyn-Waimakariri and Little Rakaia combined surface and groundwater allocation zones (with modified boundaries compared to PLWRP) and Kaituna.
Water allocation limits	Groundwater limits as per NRRP (substantially over-allocated) based on 50% of land-surface recharge. Surface water limits set at 20% natural 7DMALF.	Combined surface and groundwater allocations calculated to provide ecological base flows in lowland streams. Allocation volume about 35% less than current allocation.
New takes	**Prohibited**	**Prohibited**
Water permit transfers	Transfers enabled within same surface water catchment or same groundwater zone (with proportion surrendered at Environment Canterbury's discretion)	Transfers enabled for surface water and stream-depleting groundwater takes within same surface water catchment, and of groundwater within same water allocation zone provided surrender 50%. Note different for Kaituna and Little Rakaia. Cannot transfer groundwater from lower to upper plains. CPW shareholders cannot transfer groundwater permits.

LUDF Indicative Nitrogen Baseline



The Nitrogen Baseline Graph above shows the annual predicted N-loss for LUDF over the period 2009/10 to 2012/13, the period defined as the Nitrogen baseline in the Land and Water Regional Plan.

The absolute numbers presented above are higher than normally associated with N-loss for LUDF, and relate to the specific protocol and assumptions used in this calculation of the farms N-loss. It is likely the absolute numbers will change over time, as the protocol is further refined and the Overseer model continually refined and enhanced.

The LWRP requires the same input data and protocol for calculating the baseline and the nitrogen loss calculation for the most recent four year period, meaning the comparison of N-loss against the baseline should be calculated on the same basis.

Assumptions used in the calculating the above N-loss include:

1. Seven Blocks, comprising four soil types, three of which receive effluent on part of the soil.
2. Irrigation months and type noted, but no irrigation volume inputted.
3. Rainfall calculated via the climate tool
4. Clover level and pasture quality not specified
5. Specific cow numbers entered each month
6. Protocol as per the recommendations in the “Overseer Best Practice Data Input Standards”

Ravensdown helps Canterbury farmers adapt to nitrogen caps

By Shaun Burkett, Ravensdown Environmental Specialist

We're proud to support the South Island Dairying Development Centre and much of their insight is going to be invaluable as the sector grapples with the new regulations from Environment Canterbury.

Now that ECan's Land and Water Regional Plan (LWRP) now carries legal weight behind it, the main focus for Ravensdown continues to be how the plan addresses nitrogen losses and fertiliser application for its Canterbury shareholders.

Ravensdown has a trained team of environmental consultants who are already helping Canterbury farmers come to terms with the new regulations and develop Farm Environment Plans. Our field-based team is well trained in using the industry's OVERSEER nutrient modelling tool to create nutrient budgets.

For designated "red" zones, ECan has introduced an effective nitrogen cap, which means that there is to be no increase in nitrogen losses above the nitrogen baseline.

What is a Farm Environment Plan?

Any farming activity that triggers the nutrient management rules and requires resource consent needs a farm environment plan (FEP). A farm environment plan is a nutrient management planning tool that aims to optimise production while reducing nutrient losses to the receiving environment. The FEP is specific to your property, will account for all nutrient inputs and outputs within the farm system, address any adverse environmental effects and risks and identify mitigation strategies.

If you want more details about whether you might need an Farm Environment Plan, then call our Customer Centre on 0800 100 123.

Nutrient know-how for New Zealand www.ravensdown.co.nz

Nutrient know-how for New Zealand

From the lab to the land, Ravensdown's unique end-to-end nutrient management service keeps things simple for you.

Ask us how.

0800 100 123 www.ravensdown.co.nz

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